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REPORT No. 16 JULY, 1925

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DEPARTMENT OF AGRICULTURE
GOVERNMENT RESEARCH INSTITUTE
FORMOSA, JAPAN

KINTARO OSHIMA, *Director*

APHIDIDAE OF FORMOSA

PART 4

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RYOICHI TAKAHASHI

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臺灣總督府

中央研究所農業部報告

第十六號

臺灣産蚜蟲科ニ關スル研究（四）

臺灣總督府中央研究所

大正十四年七月

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Takahashi, R.
Aphididae of Formosa

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APHIDIDAE OF FORMOSA—4.

By

RYOICHI TAKAHASHI

Introduction

In the present paper, I consider the natural enemies of Aphididae and also record for the first time thirty-nine species of the family from our island. At present, 181 species of these insects are known to occur in Formosa, of which 142 have already been recorded in the former reports.

List of species added to the fauna of Formosa
in the present paper.

Macrosiphum rosaefolium Theob.
M. itoe n. sp.
M. species.
M. species.
M. species.
Myzus sakurae Mats. ?
M. montanus n. sp.
M. species.
M. species.
Capitophorus species.
Matsumuraja formosana n. sp.
Amphorophora viburni n. sp.
A. katoi n. sp.
A. species.
Cavariella japonica Essig et Kuw.
Toxoptera scirpi Pass.
Greenidea kuwanai Perg.
G. mushana n. sp.
G. tattakana n. sp.
G. myricae n. sp.
G. mangiferae n. sp.

G. *species.*
Myzocallis *mushensis* n. sp.
M. *sasae* Mats. ?
Dilachnus *orientalis* n. sp.
D. *taiwanus* n. sp.
D. *liquidambarus* n. sp.
Lachnus *niitakayamensis* n. sp.
Stomaphis *liquidambarus* n. sp.
Anoecia *species.*
Oregma *montana* van der Goot. ?
O. *tattakana* n. sp.
Ceratoglyphina *bambusae* v. d. Goot.
Cerataphis *bambusifoliae* n. sp.
Aleurodaphis *mikaniae* n. sp.
Astegopteryx *cuspidatae* Essig et Kuw.
A. *species.*
Formosaphis n. g. *micheliae* n. sp.
Tetraneura ? *species.*

The type specimens are preserved in the entomological laboratory of this Institute. All the figures accompanying this report were made by the author. The results of further studies will be published in certain journals in Japan or other countries.

The author expresses his appreciation of the kind help extended by Dr. T. Shiraki, Chief of the Section of Economic Zoology, during the course of the work. Grateful acknowledgement is due to Prof. Dr. C. P. Alexander of the Massachusetts Agricultural College of the United States of America, who kindly corrected many errors in English in the manuscript of this paper. The author must also express his sincere gratitude to Prof. H. Yuasa of the Kyoto Imperial University for the privilege of using his private literature, and to Drs. L. O. Howard and A. B. Gahan of the Bureau of Entomology in Washington for their kindness in identifying parasitic Hymenoptera. The author's thanks are due to Messrs. J. Sonan and M. Kato for the valuable specimens presented to him. Lastly, but in no less degree, the author wishes to express his thanks to the Hon. Prof. Dr. K. Oshima, Director of the Department of Agriculture, for his kindness in publishing this paper.

Natural enemies of Aphididae

The colonies of Aphididae are frequented by various Arthropods, mostly insects, in addition to those which are parasitic or prey upon them. The visitors and intruders of the aphid colonies, as well as insects living with the aphids, may be arranged in the following categories:

(1) Insects which are parasitic or feed on Aphididae.

(2) Insects which eat the excrements or honeydew of Aphididae.

Many Formicidae, *Apis* and some other Hymenoptera, many Diptera, and a few Coleoptera (Nitidulidae) vistit the aphid colonies in search of this liquid. They also visit certain Coccidae, Chermidae, Cicadellidae and Fulgoridae for the same purpose. According to Pittioni (Rev. App. Ent., A, XI, pt. 11, p. 508) many Noctuid moths also eat this dew.

(3) Insects which are parasitic or feed on the direct enemies of Aphididae.

The parasites of Syrphidae and Coccinellidae, as well as the hyperparasites of the aphids, are seen in the colonies.

(4) Insects which prey upon the honey-dew-eaters.

Some Mantidae and spiders sometimes catch certain Diptera and other honey-dew-eaters. They also destroy the aphids.

(5) Insects which are inhabiting the same hosts as those of the aphids. Certain Coccidae and Chermidae are sometimes found associating with the aphids. This depends largely on the host plant. The apterous forms of *Shivaphis celti* Das are sometimes found under the webs of *Caecilius annulicornis* (Corrodentia) on the leaves of *Celtis,* as already recorded in my paper on the biology of Corrodentia (Dobutsugaku Zasshi, Tokyo, XXXIII, 392, pp. 173-180). Two or more species of aphids on the same host are sometimes found together, as already mentioned in my paper, Aphididae of Formosa, part 2.

(6) Insects in the nests of which Aphididae are found.

Oregma bambusicola Takah. is sometimes found in the nests of *Capritermes nitobei* Shiraki (Aphididae of Formosa, part 2, p. 143). *Termitaphis* Wasm. first reffered to Aphididae, inhabiting the nests of Termitidae, was removed to Termitocoridae Silv. (Termitaphididae).

(7) Accidental visitors.

The Aphididae have an extraordinarily wide range of enemies. This no doubt depends on the following habits and characters of these creatures:

(1) The aphids are abundant in species and individuals.

(2) Most species are inactive or sedentary, being decidedly gregarious in habit, and congregate on the surface of the leaves or branches of plants.

It is obvious that the larvae of some Diptera (Syrphidae, *Leucopis*, *Chloropisca*, *Aphidoletes*) and a few Lepidoptera (*Taraka hamada* Druce, etc.) can capture only such inactive insects. Some Callipterina are rather sporadic, having a habit of jumping from the host and hence their enemies are fewer. The enemies of *Greenidea* seem to be very few. This is perhaps due to the rather active habit of this aphid. The species in galls are usually protected from predacious or parasitic enemies.

(3) The aphids are mostly weak, delicate and appetizing, and any predatory insects or spiders are easily able to eat them.

(4) The aphids are viviparous for a long period from spring to autumn (in the tropics they are viviparous throughout the year), supplying a continual food source for the predatory insects. Davis has found that the length of the various stages of *Phyllophaga* has a direct relation to the number of enemies in each stage (Bull. Illinois Dept. Registration and Education, Div. Nat. Hist. Survey, XIII, 5)

The number of aphids in the field also depends to a great extent upon various inorganic influences, they being killed mechanically by rains, winds, etc. It is needless to say that these defenceless, delicate creatures maintain their existence only by the extraordinary powers of multiplication given to them by parthenogenesis, viviparity and rapid growth. The prominent fluctuation of the numbers of aphid individuals in the field is apparently due to the two peculiar features—rapid multiplication and defenceless characters—of these animals.

The predominant natural enemies of insects are always other insects. The aphids are subject to attacks of abundant enemies, most of which are, of course, insects.

(Orthoptera) Mantidae, *Oecanthus*, *Xiphidium*, *Camptonotus*, etc. have been recorded by various investigators to eat the aphids. In Formosa, Mantidae are sometimes found to prey upon various species of these insects.

(Rhynchota) The predatory species of Miridae, Hebridae, Reduviidae and Pentatomidae each are known to eat aphids. No Rhynchota have been noticed eating aphids in Formosa.

(Neuroptera) The insects included in Chrysopidae and Hemerobiidae destroy the aphids and various other soft-bodied insects. According to Kuwayama (Trans. Formosan Nat. Hist. Soc., XIV, 72), thirteen species of Chrysopide are known to occur in Formosa. The author has observed an adult of Mantispidae preying upon *Phyllaphis fagifoliae* Takah. at Tokyo. Kurisaki has recorded that some aphids on *Citrus* pushed their beaks into the eggs of *Chrysopa boninensis* Okam. and *C. cognata* Okam. and sucked up the sap from them (Insect World, Gifu, XXIV. Nos. 4 and 6). Such a fact was also observed by Girault, according to whom a species of aphid on plum inserted the beaks into the eggs of the ladybird, *Megilla maculata* De Geer and sucked them dry (Ent. News, XIX, pp. 132-133).

(Lepidoptera) The larvae of *Taraka hamada* Druce (Lycaenidae) feed on *Oregma japonica* Takah. infesting *Bambusa* in Japan. This butterfly is not found in Formosa, though many species of *Oregma* are common on *Bambusa* there. According to van Deventer (Handboek ten Dienste van de Suikerriet-cultuur en de Rietsuiker-fabricage op Java, 1906), in Java, the larvae of *Ephestia cautella* Hamps. (Pyralidae) devour *Oregma lanigera* Zehnt. on the sugar-cane. In Formosa also, this moth is said to feed on this *Oregma* and I have observed numerous larvae of *Ephestia cautella ?* in a colony of *Oregma bambusicola* Takah. at Taihoku.

(Diptera) The larvae of *Chloropisca* (Oscinidae), *Leucopis* (Agromyzidae) and *Aphidoletes* (Cecidomyiidae), as well as of many Syrphidae, are known to be aphidovorous. *Greenidea* and most Callipterina are usually free from the attacks of these flies.

(Coleoptera) *Lebia* (Carabidae) is said to destroy the aphids. *Podabrus* and other Telephoridae prey upon these insects. I have observed an adult of *Idgia flavocollis* R. feeding on *Macrosiphum gobonis* Mats. and another species of the same family on *Oregma bambusifoliae* Takah. at Taihoku, and many adults of *Podabrus sp* devouring *Oregma montana* van der Goot ? at Sakuraonsen in Taichu-prefecture in May 1924. The larvae and adults of many Coccinellidae which voraciously devour various soft-bodied insects find their most ordinary and suitable food in the aphids. In Formosa I have collected the following aphidophagous Coccinellidae :

Coelophora biplagiata Swartz feeding on *Macrosiphum formosanum* Takah , *M. gobonis* Mats., *Rhopalosiphum pseudobrassicae* Davis, *Aphis gossypii* Glov., *A. medicaginis* Koch, *A. pomi* De Geer, *A. saliceti* Kalt., *Brachysiphoniella* *gramini* Takah., *Shivaphis celti* Das, *Neophyllaphis podocarpi* Takah., *Phyllaphoides bambusicola* Takah., *Eulachnus piniformosanus* Takah., *Oregma lanigera* Zehnt., *O. bambusifoliae* Takah., *O. bambusicola* Takah., *Astegopteryx fici* Takah., *A. quercicola* Takah., etc.

Alesia discolor Fab. feeding on *Macrosiphum formosanum* Takah., *M. formosartemisiae* Takah. and *Neophyllaphis podocarpi* Takah.

Chilomenes 6-maculata Fab. feeding on *Macrosiphum formosanum* Takah.

Aspidimerus orbiculatus Gyll. feeding on *Aphis gossypii* Glov. and *Shivaphis celti* Das.

Coccinella sp. feeding on *Macrosiphum gobonis* Mats.

Coccinella 7-punctata L. feeding on *Macrosiphum gobonis* Mats. and *Rhopalosiphum pseudobrassicae* Davis.

Leis 15-*maculata* Hope feeding on *Neophyllaphis podocarpi* Takah.

Propylea conglobata L. feeding on *Aphis gossypii* Glov., *Macrosiphum formosanum* Takah., *M. gobonis* Mats., etc.

Synonycha grandis Thunb. feeding on *Aphis saliceti* Kalt , *Oregma lanigera* Zehnt. and *O. bambusicola* Takah. This and *Scymnus sp.* are the most effective enemies of *Oregma lanigera.*

Scymnus sp. feeding on *Aphis gossypii* Glov. and *Oregma lanigera* Zehnt.

Scymnus sp. feeding on *Macrosiphum gobonis* Mats. and *Aphis malvoides* v. d. Goot.

It is a very interesting fact, moreover, that these beetles sometimes eat certain fungi and pollen.

(Hymenoptera) Some fossorial wasps are known to eat the aphids, though this has never been observed in our island. Each of the families Braconidae, Chalcididae, Proctotrupidae, etc. includes many aphid-parasites. According to van Deventer, *Oregma lanigera* is parasitized by *Encarsia flavoscutellum* Zehnt. in Java, but in Formosa, so far as I know, there are no Hymenoptera parasitic upon this aphis nor on other species of *Oregma.* The parasites of the Callipterina in our island have likewise never been discovered, and those of *Greenidea* seem to be quite scarce, only a few specimens having been collected. The egg-parasites of the family are extremely scarce. In Formosa almost all the species of these insects are viviparous throughout the year, no egg-parasites having been observed. The winged viviparous females of *Macrosiphum formosanum* Takah. sometimes become brachypterous forms, when they are parasitized by a

Hymenopteran in the nymphal stage, as recorded in my former paper, Aphididae of Formosa, part 2 (p. 75). Rockwood observed that an *Aphelinus* fed on the juices at the wound made by the ovipositor on the body of an aphis (Jl. Econ. Ent., x. p. 415).

In Formosa I have collected the following aphid-parasites which were kindly identified by Dr. A. B. Gahan of the Bureau of Entomology at Washington (through Shiraki and Howard):

Braconidae

Parasite	Host
Lysiphlebus japonicus Ashm.	*Macrosiphum neoartemisiae* Takah. *Toxoptera aurantii* Boyer.
Diaeretus nipponensis Vier.	*Greenidea ficicola* Takah. *Rhopalosiphum pseudobrassicae* Davis.
Trioxys sp.	*Macrosiphum citricola* v. d. Goot.
Trioxys sp.	*Aphis gossypii* Glov.
Ephedrus japonicus Ashm.	*Aphis rumicis* L. *Brachysiphoniella gramini* Takah.
Aphidius sp.	*Dilachnus piniformosanus* Takah.
Aphidius sp.	*Macrosiphum formosartemisiae* Takah.
Aphidius sp.	*Unilachnus orientalis* Takah.
Aphidius sp.	*Macrosiphum granarium* Takah.
Aphidius ervi Hal.	*Macrosiphum sp.* on *Rubus sp.*
Aphidius sp.	*Macrosipmum tanacetarium* Koch.
Praon sp.	*Macrosiphum formosanum* Takah.

Chalcididae

Aphelinus sp.	*Macrosiphum formosanum* Takah.
Aphelinus sp.	*Aphis rumicis* L.
Pachyneuron siphonophorae Ashm.	*Macrosiphum formosanum* Takah.

Proctotrupidae

Lygocerus sp.	*Cavariella neocapreae* Takah.
Lygocerus sp.	*Macrosiphum alopecuri* Takah.

(Other animals) According to a paper by Davis (Psyche XXIII, p. 36), the subterranean forms of *Trama* and *Anoecia* are rarely parasitized by nematodes. Various spiders and mites destroy large numbers of the aphids. In Formosa a red mite is rather commonly found on *Macrosiphum formosanum* Takah., *M. gobonis* Mats., *M. formosartemisiae* Takah., *Aphis medicaginis* Koch, *Aphis malvoides* van der Goot, *Shiraphis celti* Das, *Neophyllaphis podocarpi* Takah., *Paracletus cynodonti* Das, etc.

Poultry, sparrows and perhaps many other wild birds devour various aphids in Formosa. The long-eared bat is reported by Theobald to eat *Aphis abietinus* Wlk. in England (Ann. App. Biol., 1, 1, pp. 23-26).

(Fungi) Several species of *Entomophthora* or *Empusa* have been recorded as being parasitic upon the aphids. In Formosa it is not uncommon to find a field in which fifty or more per cent of the viviparous females of *Rhopalosiphum pseudobrassicae* Davis have been killed by a fungous disease. Numerous viviparous females of *Myzus momonis* Mats. killed by a fungus were observed at Sakuraonsen in Taichu-prefecture in May 1924. According to Lyle (Entomologist, Li, pp. 227-229), *Cordyceps* sometimes attacks the cocoons of Braconidae firmly affixed to the leaves beneath the bodies of the aphids.

The practical use of the insect enemies of the aphids has been undertaken in some countries in recent years. According to Sundberg and Peluffo (Rev. App. Ent., A, x, pp. 226-227), *Aphelinus mali*, the parasite of *Eriosoma lanigera* Hausm., was imported into Uruguay from North America and has become established there. This parasite was also introduced into New Zealand (Tillyard, N. Z. Jl. Agric., xxiii, pp. 7-19) and Germany (Meyer, Rev. App. Ent., A, xii, p. 145). Weise reported that *Hippodamia convergens* (Coccinellidae) was imported into France from the United States of America to check aphids on fruit trees (Wien. Ent. Ztg., xxxix, p. 104). As no parasites of the sugar-cane aphid, *Oregma lanigera* Zehnt., are found in Formosa, it is very desirable to import *Encarsia flavoscutellum* Zehnt., the parasite of the aphis, from Java, a plan that Mr. M. Ishida is now trying out. It is also very desirable to import *Aphelinus mali* into Honshu and Hokkaido from North America to check *Eriosoma lanigera* Hausm., since no parasites of this pest have ever been found in Japan.

SOME FORMOSAN APHIDIDAE

Macrosiphum sp.

An apterous form parasited by a Hymenoptera was observed by the author at Tattaka in Taichu-prefecture, Formosa, in May 1924.

Hoct—*Lespedeza sp.*

Hitherto unrecorded from Formosa.

Macrosiphum rosaefolium Theob.

(Pl. 1, B, figs. 1-2).

Bull. Ent. Research, VI, pt. 2, p. 109 (1915).

Wingless viviparous female

Green. Cornicles greenish, with the tips somewhat dusky. Cauda greenish. In a specimen treated with caustic potash, antennae almost dusky, paler at the base of the 3rd joint; apices of femora and tibiae, and tarsi dusky. Body without distinct hairs. Head with a short wide tubercle at the middle of the front, provided with a few very small hairs on the dorsum. Frontal tubercles distinct, moderately convex on the inner side Antennae almost as long as the body, imbricated, provided with a few very small hairs; the 1st joint somewhat convex on the inner side; the 3rd furnished with 8 or 11 small circular sensoria arranged in one single row almost over the basal three-fifths; the 4th without sensoria; the relative length of joints about as follows: III-136, IV-95, V-78, VI-132 (32+100). Rostrum reaching beyond the middle coxae. Abdomen furnished with a few short setae. Cornicles long, rather slender, cylindrical, somewhat expanded toward the base, not dilated at the base, slightly or scarcely curved, imbricated, not reticulated, about 1.5 times as long as the cauda, almost as long as the 3rd antennal joint. Cauda long, stouter than the cornicle, very slightly shorter than the 4th antennal joint, provided with 2 pairs of lateral bristles and a much shorter bristle near the tip. Legs long and slender; tibiae stouter than the 3rd antennal joints, but more slender than the cornicle, with many moderately long setae; front tibiae much longer than the cornicle; hind tarsi almost as long as the basal part of the last antennal joint.

Length of body-about 2.3 mm. (not including the length of cauda).

Antennae—about 2.4 mm. Cornicle—about 0.65 mm.

Host—*Rosa sp.*

Distribution—Formosa: Tattaka (altitude about 7330 feet) in Taichu-prefecture; Africa; Java.

Hitherto unrecorded from Formosa.

An apterous female was collected by the author on May 17, 1924. The specimen differs from the original description in some characters, but seems to be identical with this species.

Macrosiphum sp.

Winged viviparous female

Yellow. Head provided with some rather long not knobbed setae. Frontal tubercles large, somewhat convex on the inner side. Antennae provided with some rather long not knobbed setae; the 1st joint much larger than the 2nd: the 3rd stout, a little imbricated on the basal portion, provided with 23 or 24 rather large, not protuberant, circular sensoria scattered over the whole length; the 4th not imbricated, furnished with 0-2 circular sensoria; the 5th slightly imbricated; the relative length of joints about as follows: III-140, IV-100, V-80, VI-149, (22+127). Wings somewhat clouded along the 1st and 2nd obliques; veins rather stout; the 1st oblique on the front wing almost straight; the 2nd somewhat curved; the 3rd twice forked, the upper branch extending to the tip of the wing; stigmatic vein rather strongly curved; hind wings with 2 parallel obliques; hooklets 3. Cornicles long, cylindrical, very slightly expanded toward the base, quite slightly dilated near the apex, imbricated, scarcely reticulated at the tip, almost as stout as the hind tibia, almost as long as the 4th antennal joint. Legs long; tibiae almost as stout as the 3rd antennal joint, provided with many long stout setae which are not capitate; hind tarsi slightly longer than the basal portion of the last antennal joint.

Length of body—about 2.9 mm. Antenna—about 2.5 mm.

Fore wing—about 3.5 mm. Cornicle—about 0.6 mm.

Host.—*Petasites tricholobus.*

Distribution.—Formosa: Sankakuho (altitude about 7500 feet) in Taichu-prefecture.

Hitherto unrecorded from Formosa. A specimen was collected by the author on May 19, 1924. As the description of *M. petasites* Mats. (Jl. Agr. Coll. Sapporo, VII, pt. 6, p. 394) is very brief and my specimen is in a poor condition, the identification is impossible.

Macrosiphum sp.

Wingless viviparous female

Brownish black. Antennae, cornicles and cauda black. Distal portions of femora, bases and apices of tibiae, and tarsi black. Body oval. Head provided with some long stout hairs that are shorter than the 2nd antennal joint. Frontal tubercles large, stout, as long as the 2nd antennal joint, straight on the inner side. Antennae provided with some rather long scarcely knobbed setae that are shorter than those on the head; the 1st joint much larger than the 2nd, somewhat angulated on the inner side: the 3rd rather stout, not imbricated, furnished with from 15-19 very small protuberant circular sensoria scattered over the basal half; the 4th striate, without sensoria; the 5th with the apical sensorium small, distinctly protuberant; the relative length of joints about as follows: III-125, IV-95, V-74, VI-30+? Rostrum reaching the middle coxae. Abdominal segments each on the dorsum furnished with some long stout bristles arranged in a transverse row. The hairs on the abdomen almost as long as those on the head, arising from very small tubercles. Cornicles large, stout, gradually expanded toward the base, not dilated at the base, sometimes slightly curved, imbricated, reticulated on about the distal one-third, much stouter than the cauda, a little longer than the 3rd antennal joint, about 1.6 times as long as the cauda. Cauda long, slender, with some very long bristles. Legs very long, provided with many long very stout setae; tibiae stouter than the 3rd antennal joint; hind tarsi shorter than the basal part of the last antennal joint.

Length of body—about 2.6 mm. Antenna— ?

Cornicle—about 0.7 mm.

Host.—*Solidago virga-aurea, Lactuca oldhami.*

Distribution.—Formosa: Sankakuho (altitude about 7500 feet) and Tattaka (altitude about 7300 feet) in Taichu-prefecture.

Hitherto unrecorded from Formosa. A few apterous forms were collected by the author in May, 1924.

Macrosiphum itoe n. sp.

(Pl. 1, A, figs. 1-5)

Wingless viviparous female

Dark green, sometimes brownish. In specimens treated with caustic potash, antennae dusky on the distal half, cornicles dark brown, legs and cauda not black, in some specimens body with many large and small brownish patches on the dorsum. Body oval. Head furnished with 8 moderately long stiff setae on the dorsum. distinctly protruding and furnished with a pair of longer setae at the middle of the front. Frontal tubercles large, almost as long as the 2nd antennal joint, the inner side somewhat convex, furnished with 2 setae. Eyes protuberant. Antennae slender, with a few very short setae; the 1st joint a little longer and much stouter than the 2nd, convex on the inner side; the 3rd not imbricated, provided with some very short setae, without sensoria; the 4th somewhat imbricated, without sensoria; the relative length of joints about as follows: III-74, IV-52, V-45, VI-99 (30+69) Rostrum reaching the middle or hind coxae. Abdomen furnished with a few very short setae on the dorsum. Cornicles rather stout, gradually expanded toward the base, not dilated at the base, somewhat curved, somewhat imbricated, not reticulated, almost as long as the 4th and 5th antennal joints taken together, about twice as long as the cauda. Cauda rather stout, with a slight constriction near the base, provided with 3 or 4 pairs of lateral bristles. Lags slender; tibiae stouter than the 3rd antennal joint, furnished with many moderately long setae; hind tarsi somewhat shorter than the basal part of the last antennal joint.

Length of body—about 1.8 mm. Antenna—about 1.3 mm.

Cornicle—about 0.4 mm.

Winged viviparous female

Green. Head provided with 8 maderately long setae on the dorsum, slightly protruding and furnished with a pair of longer setae at the middle of the front. Frontal tubercles very short, straight on the inner side. Antennae slender, with a few very short setae; the 1st joint slightly longer, but much stouter than the 2nd, convex on the inner side; the 3rd not imbricated, provided with about 30 rather large or small, not protuberant, circular sensoria scattered over the whole length; the 4th imbricated, furnished with 1-5 similar sensoria arranged in a single row over the whole length; the 5th with the usal sensorium; the relative length of joints about as follows: III-90, IV-60, V-55, VI-107 (30+77). Rostrum reaching the middle coxae. Wings rather narrow, hyaline; the 1st and 2nd obliques on the front wing almost straight; the 3rd twice forked, the upper branch extending to the apex of the wing; hind wings with 2 somewhat divergent obliques; hooklets 4. Cornicles cylindrical, long, somewhat expanded toward the base on the basal half, somewhat curved, imbricated, not reticulated, almost as long as the 3rd antennal joint, about twice or more times as long as the cauda. Cauda more slender than that of the apterous form, provided with 4 pairs of long lateral bristles. Legs slender; tibiae almost as slender as or slightly stouter than the 3rd antennal joint, provided with many rather long setae; hind tarsi somewhat shorter than the basal part of the last antennal joint. Abdomen with a few very short setae on the dorsum.

Length of body—about 2.0 mm. Antenna—about 2.0 mm.
Cornicle—about 0.5 mm. Fore wing—about 3.1 mm.

Host.—*Rhododendron lasiostylum*.

Distribution.—Formosa: Tattaka (altitude about 7300 feet) in Taichu-prefecture.

Some specimens were collected by the author on May 17, 1924. This species is dedicated to the memory of the late Mrs. N. Ito.

Myzus sp.

(Pl. 1, A, figs. 7-9)

Wingless viviparous female

Dark green. Cornicles and cauda black. The 5th and 6th antennal joints, femora excepting the bases, apices of tibiae, and tarsi black. Body oval, without prominent hairs. Head on the dorsum furnished with 8 very short setae. Frontal tubercles short, distinctly gibbous on the inner side. Eyes rather large. Antennae imbricated, provided with a few very small hairs; the 1st joint larger than the 2nd; the 3rd and 4th sometimes not well defined, without sensoria; the 5th with the sensorium of medium size; the relative length of joints about as follows: III-49, IV-40, V-26, VI-80 (15+65). Rostrum reaching a little beyond the middle coxae. Abdomen provided with a few very short setae arranged in a transverse row on the dorsum of the segment. Cornicles rather large, long, cylindrical, somewhat expanded toward the base, not dilated at the base, straight, roughly imbricated, not reticulated, almost as long as the distal part of the last antennal joint, a little more than twice as long as the cauda. Cauda large, very stout, tapering, much longer than wide, with 2 pairs of long lateral bristles. Legs rather stout; tibiae stouter than the 3rd antennal joint, but more slender than the cornicle, provided with many moderately long setae;

front tibiae much longer than the cornicle: tarsi imbricated, hind tarsi slightly longer than the 3rd antennal joint.

Length of body—about 1.6 mm. Antenna—about 1.15 mm.

Cornicle—about 0.35 mm.

Host.—*Malus formosanus,* attacking the leaf. The infested leaf is rolled.

Distribution.—Formosa: Tattaka (altitude about 7330 feet) in Taichu-prefecture.

Hitherto unrecorded from Formosa.

Some apterous forms were collected by the author on May 18, 1924.

Myzus momonis Mats.

Aphididae of Formosa, part 2, pp. 25 and 80 (1924)

Many apterous viviparous females, which were dark green in general colour, were collected by the author in the rolled leaves of *Prunus persica* at Sakuraonsen and Baikei in May, 1924. The cornicles of this aphis are provided with a few very short setae. These setae are removed in the figures 7, 8, 9, and 14 of the plate V in the farmer paper (Aphididae of Formosa, part 2).

Myzus sp.

Wingless viviparous female

Dark green. Body oval, without hairs. Antennae almost as long as or shorter than the body, imbricated, provided with a few very short setae; the 3rd joint without sensoria; the relative length of joints about as follows: III-65, IV-40, V-35, VI-106 (17+89). Cornicles very long and slender, cylindrical, expanded toward the base on the basal portion, not curved, roughly imbricated, not reticulated, almost as long as the distal part of the last antennal joint, more than 3 times as long as the cauda, the distal part almost as stout as the hind tibia. Legs very long and slender, femora imbricated, tibiae provided with some setae mostly on th distal half.

Length of body—about 1.5 mm.

Host.—*Siegesbeckia orientalis.*

Distribution.—Formosa: Taihoku.

Hithero unrecorded from Formosa.

Two specimens were collected on April 13, 1922.

Myzus sakurae Mats ?

(Pl. 1, A, figs. 10-11 and Pl. 1, B, figs. 3-5)

Jl. Coll. Agric., Sapporo, VII, pt. 6, p. 403 (1917).

Wingless viviparous female

Yellow. Antennae yellow, with the apex of the 5th joint and the 6th dusky. Cornicles and cauda yellow. Legs yellow, apices of tibiae, and tarsi dusky. Body oval, scarcely provided with hairs. Head not smooth, provided with a few very short setae on the dorsal side. Frontal tubercles large, almost as long as the 2nd antennal joint on the inner portion, distnctly gibbous on the inner side. Antennae slender, imbricated, with a few minute setae; the 1st joint much larger than the 2nd, convex on the inner side; the 3rd without sensoria; the 5th with the primary sensorium small; the relative length of joints about as follows: III-65, IV-40, V-32, VI-92 (18+74). Rostrum reaching the middle coxae. Abdomen not reticulated on the surface, almost without hairs on the dorsum. Cornicles long, cylindrical, somewhat expanded on the basal portion, very slightly or scarcely dilated near the tip, not curved, imbricated, not reticulated, almost as long as the distal part of the last antennal joint, more than twice as long as the cauda. Cauda rather large, stout, tapering, longer than wide, with 2 pairs of lateral bristles. Legs long and slender, tibiae almost as stout as or slightly stouter than the 3rd antennal joint, but much more slender than the cornicle, provided with many moderately long or rather short setae; front tibiae longer than the cornicle; tarsi somewhat imbricated; hind tarsi almost as long as the basal part of the last antennal joint.

Length of body—about 1.5 mm. Antenna—about 1.5 mm.

Cornicle—about 0.4 mm.

Winged viviparous female

(Colour notes from specimens preserved in alcohol). Yellow. Head dusky on the dorsum. Antennae blackish, paler at the base of the 3rd joint. Thorax black. Abdomen with 4 large dusky patches on the side and some dusky patches on the dorsum. Cornicles yellow. Cauda somewhat dusky. Legs pale yellowish, dusky on the distal halves of femora, apices of tibiae, and tarsi. Wings hyaline, very slightly clouded along the 1st and 2nd obliques on the front wing; stigma pale gray; veins brownish, the 1st and 2nd obliques darker. Head provided with 8 very short setae on the dorsal side. Frontal tubercles very short, moderately convex on the inner side which is furnished with some setae. Antennae slender, almost without hairs; the 1st joint much larger than the 2nd, somewhat imbricated, somewhat convex on the inner side; the 3rd not imbricated, provided with about 40 rather small slightly protuberant circular sensoria scattered over the whole length; the 4th somewhat imbricated, provided with about 15 similar sensoria scattered over the whole length; the 5th provided with 2-4 similar sensoria not in a single row, the apical sensorium of medium size; the relative length of joints about as follows: III-95, IV-56, V-42, VI-118 (23+95). Rostrum reaching the middle coxae. Abdomen almost without hairs on the dorsum. Cornicles cylindrical, somewhat expanded at the base, scarcely dilated on the distal portion, not curved, slightly imbricated, almost as long as the 4th antennal joint, about 3 times as long as the cauda. Cauda broadest at the base, tapering, almost triangular in shape when seen from above, somewhat longer than wide, with the apex pointed, with 2 pairs of lateral bristles near the tip. The 1st and 2nd obliques on the front wing very slightly curved; the 3rd twice forked, the upper branch extending to the tip of the wing; stigmatic vein moderatly curved; hind wings with 2 almost parallel obliques; hooklets 2. Legs long and slender; tibiae slightly more slender than the 3rd antennal joint, provided with many moderately long setae; tarsi somewhat imbricated, hind tarsi slightly shorter than the basal part of the 6th antennal joint.

Length of body—about 1.5 mm.	Antenna—about 1.6 mm.
Fore wing—about 2.3 mm.	Cornicle—about 0.3 mm.

Host—*Prunus taiwaniana*, attacking the lower side of the leaf. The infested feaf is rolled.

Distribution.—Formosa: Musha.
Japan

Hitherto unrecorded from Formosa.

Many apterous and winged viviparous females were collected by the author on May 15, 1924.

Myzus varians Davidson.

Jl. Econ. Entom., v, p. 409 (1912); Takahashi, Aphididae of Formosa, part 3, p. 29 (1924)

Syn. *Myzus tropicalis*, Takahashi, Aphididae of Formosa, part 2, pp. 24 and 81 (1923) and part 3, p. 27 (1924).

Host.—*Prunus persica*, *Clematis* sp.

Distribution.—Formosa, Japan, North America.

A few apterous viviparous females were observed at Sakuraonsen, Formosa, on *Clematis* sp. on May 16, 1924.

Myzus montanus n. sp.

(Pl. 1, A, fig. 6 & Pl. 1, B, figs. 6-10).

Wingless viviparous female

Green or yellowish green. Head and thorax dusky on the dorsum. Antennae black, with the base of the 3rd joint pale. Abdomen almost dusky on the dorsum, with many dusky markings. Cornicles and cauda black. Femora black, with the bases pale; apices of tibiae, and tarsi black. Body somewhat elongate oval. Head on the dorsum provided with 8 or 10 very short setae, not smooth on the surface. Eyes rather small. Frontal tubercles distinct, distinctly convex on the inner side. Antennae slender, imbricated, furnished with a few very short setae; the 3rd joint provided with about 20 small circular sensoria not arranged in a single row almost over the whole length; the 4th usually without sensoria, but sometimes provided with 1 or 2 small ones near the base; the 5th with the primary sensorium rather small; the relative length of joints about as follows: III-100, IV-58, V-45, VI-112 (24+88). Rostrum reaching the hind coxae. Abdomen on the dorsum provided with a few very short setae, with many spinule-rows on the posterior portion. Cornicles long, slender, a little dilated on the distal half, very slightly expanded toward the base on the basal portion, indistinctly imbricated, not reticulated, almost as long as the 3rd antennal joint, a little stouter than the hind tibia, about 2.5 or 3 times as long as the cauda. Cauda large, very stout, with 2 pairs of lateral bristles. Legs very long and slender; tibiae almost as stout as or more so than the 3rd antennal joint, furnished with many moderately or rather long setae; hind tarsi almost as long as the basal part of the last antennal joint.

Length of body—about 1.9 mm. Antenna—about 2.0 mm.

Cornicle—about 0.55 mm.

Winged viviparous female

Colour almost as in the apterous form. Fore wings somewhat clouded along the 1st and 2nd obliques. Abdomen with some dusky markings on the dorsum. Head provided with 8 very short setae on the dorsum.

Frontal tubercles shorter than those of the apterous form, moderately convex on the inner side. Antennae long and slender, imbricated, with a few very short setae; the 1st joint somewhat convex on the inner side; the 3rd furnished with about from 30-38 circular sensoria of various sizes scattered over the whole length; the 4th with from 10-18 rather small sensoria arranged almost in a single row over the whole length; the 5th with from 4-7 similar ones arranged in a sigle row; the relative length of joints about as follows: III-137, IV-105, V-80, VI-180 (35+145). Rostrum reaching the middle coxae. Wing-veins rather stout, venation normal; stigmatic vein rather strongly curved; hind wings with 2 almost parallel obliques; hooklets 3 or 4. Abdomen provided with a few very short setae on the dorsum. Cornicles long, slender, a little dilated on the distal half, not or somewhat imbricated, not reticulated, about thrice as long as the cauda, slightly shorter than the 3rd antennal joint. Cauda large, very stout, gradually tapering, with 2 pairs of lateral bristles. Legs very long and slender; tibiae provided with many moderately or rather long setae; hind tarsi shorter than the basal part of the last antennal joint.

Length of body—about 2.0 mm.	Antenna—about 2.7 mm.
Cornicle—about 0.5 mm.	Fore wing—about 3.5 mm.

Host.—*Astilbe longicarpa.*

Distribution—Formosa: Sankakuho (altitude about 7500 feet) in Taichu-prefecture.

Many apterous and a few winged forms were collected by the author in May, 1924. This aphis is not a typical *Myzus*, resembling, in some characters, *Amphorophora* or *Fullawayella*. However, it seems to belong to *Myzus* rather than to other proposed genera.

Myzus polypodicola Takah.

(Pl. IV, A, figs. 7-8 & Pl. IV, B, fig. 5)

Aphididae of Formosa, part 1, p. 21 (1921); part 2, p. 82 (1923).

Wingless viviparous female

Body oval, not elongate, provided with a few very short hairs which are very slightly knobbed on the dorsal side, and some longer bristles on the ventral surface. Head not smooth on the surface, furnished with about 10 very short setae on the dorsum. Eyes protruding, with distinct ocular tubercles. Frontal tubercles almost as long as the 2nd antennal joint, on the inner side distinctly convex and provided with a few very small setae. Antennae very long and slender, imbricated, furnished with a few very small setae; the 1st joint much larger than the 2nd, granular on the surface as on the head, provided with a few longer bristles: the 3rd without sensoria: the 5th with a small apical sensorium; the relative length of joints about as follows: III-117, IV-97, V-67, VI-171 (24+147). Rostrum reaching the hind coxae. Thorax and abdomen irregularly reticulated on the dorsum, without tubercles. Hairs on the hind part of the abdomen longer. Cornicles large, cylindrical, rather stout, gradually tapering, scarcely expanded at the base, not curved, faintly imbricated, reticulated on the distal portion, almost as long as the 4th antennal joint, about 3.5 times as long as the cauda, about 4 times as long as wide at the base. Cauda rather stout, when seen from above a little longer than wide, narrowed on the distal half, the basal part almost as stout as the proximal part of the cornicle, provided with 2 pairs of long lateral bristles, about as long as the basal part of the 6th antennal joint.

Legs very long and slender; tibiae as stout as or stouter than the 3rd antennal joint, furnished with some moderately long or rather short setae; tarsi short, scarcely imbricated, hind tarsi a little shorter than the basal part of the 6th antennal joint.

Length of body—about 1.8 mm. Antenna—about 2.5 mm.

Cornicle—about 0.5 mm.

In the specimens preserved in alcohol the body is blackish brown in color, with the cornicles black. The cornicles are variable in length in the specimens collected in Formosa.

Winged viviparous female

Wings hyaline, very slightly clouded with fuscous along the 1st oblique of the front wing. Head smooth on the surface, provided with about 10 very short setae on the dorsum. Frontal tubercles short, shorter than the 2nd antennal joint; somewhat convex on the inner side.

Antennae very long and slender, furnished with a few very small setae: the 1st joint much larger than the 2nd, not smooth on the surface; the 3rd joint a little imbricated on the base, provided with about 28-33 circular sensoria which are of medium or somewhat large size, not distinctly protuberant and scattered over the whole length; the 4th faintly imbricated, furnished with about 16-20 similar sensoria; the 5th imbricated, with 0-3 similar sensoria, the sensorium at the apex small; the basal part of the 6th a little longer than the 1st; the relative length of joints about as follows: III-110, IV-85, V-65, VI-180 (25+155). Rostrum reaching a little beyond the hind coxae.

Thorax and abdomen not reticulated, with a few very short slightly knobbed seate on the dorsum; hairs on the hind part of the abdomen longer. The 1st oblique on the front wing almost straight; the 2nd very slightly or scarcely curved; the 3rd twice forked, the upper branch extending to the apex of the wing, stigmatic vein somewhat strongly curved: hind wings with 2 almost parallel obliques; hooklets 3.

Cornicles cylindrical, slightly narrowed toward the tip, not dilated at the base, not curved, faintly imbricated, reticulated on the apical portion, almost as long as the 4th antennal joint, about 3 times as long as the cauda, about 5.6 times as long as wide.

Cauda when seen from above, tapering, about 1.3 times as long as wide, somewhat narrowed on the distal half, stouter than the cornicle, almost as long as the basal part of the 6th antennal joint, furnished with 2 pairs of long lateral bristles. Legs very long and slender; tibiae almost as stout as the 4th antennal joint, provided with many moderately long setae; tarsi short, not imbricated, hind tarsi a little shorter than the basal part of the 6th antennal joint.

Length of body—about 1.75 mm. Antenna—about 2.4 mm.

Fore wing—about 2.5 mm. Cornicle—about 0.4 mm.

Host—*Dryopteris arida*.

Distribution—Formosa: Taihoku: Sumatra: Rotterdam.

Many winged and apterous viviparous females were collected by Dr. Fulmek in March 1924 in Sumatra. Hitherto unrecorded from Sumatra. The above description was made from the specimens from Sumatra. In Formosa this aphis is very rare, the winged form having never been discovered.

Myzus woodwardiae Takah. (Aphididae of Formosa, part 1, p. 20 and part 2, pp. 28 and 82) differs from *M. polypodicola* Takah. in the following characters:

(1) Body much larger, provided with much longer capitate hairs.

(2) Frontal tubercles more developed.

(3) Antennae provided with more hairs which are longer. The 3rd joint of the apterous form not imbricated, the 4th faintly imbricated. The 3rd and 4th joints of the winged form furnished with fewer sensoria almost arranged in a row.

(4) Cornicles longer.

M. polypodicola Takah. and *M. woodwardiae* Takah. resemble *Macrosiphum* in the cornicles which are reticulated on the distal portion.

Capitophorus sp.

(Pl. II, A, fig. 1)

Wingless viviparous female

White, with white cornicles and cauda. Body oblong, soft, the whole dorsum provided with numerous very long capitate hairs that are almost as long as or slightly longer than the basal part of the 6th antennal joint. Head on the dorsum furnished with about 8 capitate hairs. Eyes small. Frontal tubercles short. Antennae long and slender; the 1st joint angulated on the inner side, with a few stout capitate hairs which are somewhat shorter than the 2nd antennal joint; the 3rd scarcely imbricated, furnished with about 6 very stout capitate hairs which are almost as long as those on the 1st, without sensoria: the 4th and the following somewhat imbricated, provided with a few very small hairs; the relative length of joints about as follows: III-60, IV-45, V-59, VI-20+? 145. Rostrum reaching beyond the middle coxae. Cornicles very long and slender, cylindrical, slightly expanded toward the base, stouter than the tibia, somewhat curved, moderately imbricated except on the distal portion, not reticulated, shorter than the distal part of the last antennal joint. Cauda very stout, almost as long as the capitate hair on the hind portion of the abdomen. Legs very long and slender; tibiae with many not capitate hairs, the basal portions furnished with a few capitate hairs; front tibiae almost as long as the cornicle; hind tarsi almost as long as the basal part of the last antennal joint.

Length of body—about 1.5 mm. Cornicle—about 0.5 mm.

Host.—*Petasites tricholobus.*

Distribution.—Formosa: Sankakuho (altitude about 7500 feet) in Taichu-prefecture.

An apterous female was collected by the author on May 19, 1924.

Hitherto unrecorded from Formosa.

This species differs from *C. formosartemisiae* Takah. (Aphididae of Formosa, 1, p. 25) in the following characters: (1) The 3rd antennal joint almost as long as the 5th, provided with more longer capitate hairs. (2) Cornicles stouter, somewhat curved.

Matsumuraja formosana n. sp.

(Pl. II, A, figs. 2-4)

Wingless viviparous female

White; cornicles and cauda white. Antennae white, dusky on the distal halves of the 3rd, 4th and 5th joints and the 6th. Body elongate oval, on the dorsum provided with many capitate hairs which are subequal in length, almost as long as or slightly shorter than the 2nd antennal joint, each arising from a small or large tubercle. Head on the dorsum furnished with 8 capitate hairs that are almost as long as the 2nd antennal joint, each arising from a very small tubercle. Frontal tubercles distinct, somewhat convex on the inner side, furnished with a few capitate hairs which are slightly longer than those on the dorsum of the head. Eyes small. Antennae slender; the 1st joint much larger than the 2nd, provided with a long projection which is almost as long as the joint, rounded at the apex, with about 3 shorter capitate hairs; the 2nd provided with a few very short capitate hairs; the 3rd and 4th not imbricated, provided with a few very small hairs, without sensoria; the 5th somewhat imbricated; the relative length of joints about as follows: III-69, IV-44, V-47, VI-106 (28+78). Rostrum reaching beyond the middle coxae. Cornicles long and slender, cylindrical, scarcely curved, expanded at the base, scarcely expanded on the distal half, imbricated except on the distal portion, almost as long as or slightly longer than the distal part of the last antennal joint, shorter than the front tibia, about 3 times as long as the cauda. Cauda very stout, stouter than the cornicle, gradually tapering, with the apex rounded, about 1.5 times as long as wide, very slightly constricted at the base when seen from above, almost as long as the basal part of the last antennal joint, longer than the capitate hair on the abdomen, provided with 2 pairs of lateral bristles. Legs long and slender; tibiae almost as stout as or slightly more slender than the cornicle, very slightly stouter than the 3rd antennal joint, provided with many setae, the basal portion provided with a few short capitate hairs; hind tibiae shorter than the antenna; hind taris almost as long as the basal part of the last antennal joint.

Dorsum of the body with many tubercles each bearing a capitate hair. Pronotum with 8 capitate hairs. Meso-and metathoracic segments each at the middle of the dorsum with 4 stout tubercles arranged in a transverse row, 1 or 4 very small capitate hairs in front of these 4 tubercles and 2 or 3 tubercles on either side. Basal 7 abdominal segments each at the middle of the dorsum with 4 stout tubercles arranged in a transverse row and a similar tubercle on the side; basal one or two abdominal segments sometimes with a very short capitate hair at the middle of the dorsum; the 8th segment with about 5 very small tubercles arranged in a transverse row on the dorsum. The 4 tubercles at the middle of the dorsum of each of the meso-and metathoracic and most abdominal segments stout, somewhat narrowed toward the apex, each bearing a capitate hair which is almost as long as or shorter than the tubercle; of these 4 tubercles the inner two larger, almost as long as or longer than the 2nd antennal joint, and those on the posterior segments somewhat larger than those on the anterior segments.

Length of body—about 1.8 mm. Antenna—about 1.65 mm.

Cornicle—about 0.5 mm.

Host.—*Rubus sp.*

Distribution—Formosa: Sakuraonsen in Taichu-prefecture.

Some apterous females were collected by the author on May 16, 1924. This species is distinguishable from *M. rubi* Mats. by the shorter tubercles on the dorsum.

Amphorophora viburni n. sp.

(Pl. II. A. figs. 5-8 & Pl. II. B. fig. 1)

Winged viviparous female

Green. Antennae dusky. Cornicles green, with the tips somewhat dusky. Cauda green. Legs mostly greenish. Head on the dorsum provided with 8 moderately long setae. Frontal tubercles very short, scarcely convex on the inner side. Antennae provided with a few very short setae; the 1st joint much stouter, and a little longer than the 2nd; the 3rd not imbricated, furnished with about 45 rather large, circular or subcircular sensoria scattered over the whole length; the 4th somewhat imbricated, provided with from 8-10 similar sensoria not arranged in a single row; the 5th provided with no or from 1-3 sensoria, the apical primary sensorium of moderate size; the relative length of joints about as follows: III-134, IV-92, V-73, VI-146 (53+93). Rostrum rather stout reaching the middle coxae. Wings hyaline; the 1st and 2nd obliques on the front wing straight, the 3rd twice forked, the upper branch extending to the tip of the wing, the 2nd branch rather short; hind wings with 2 divergent obliques; hooklets 3 or 4. Abdomen on the dorsum furnished with a few setae, of which those on the posterior part are longer. Cornicles large, stout, distinctly dilated on about the distal three-fourths, somewhat expanded at the base, not imbricated nor reticulated, a little striate at the tip, longer than the 4th, but shorter than the 3rd antennal joint, about 2.5 times as long as the cauda, much stouter than the cauda. Cauda constricted at midlength, slightly shorter than the basal part of the last antennal joint, provided with 7 long bristles. Legs slender; femora more slender than the cornicle; tibiae almost as stout as the 3rd antennal joint, provided with many rather long setae; hind tarsi shorter than the cauda. Gonapophyses 3.

Length of body—about 2.3 mm. Antenna—about 2.4 mm.

Cornicle—about 0.55 mm. Forewing—about 4.0 mm.

Host.—*Viburnum arboricolum*, attacking the young leaf.

Distribution—Formosa: Tattaka (altitude about 7300 feet) in Taichu-prefecture.

A few winged forms were collected by the author on May 18, 1924. An aphis collected on *Mahonia morrisonensis* in May, 1924, at Tattaka seems to the identical with this species, the apterous form of which is described below.

Wingless viviparous female.

Green. Antennae and legs mostly greenish. Cornicles green, with the tips somewhat dusky. Cauda green. Body oval, slightly depressed. Head protruding at the middle of the front, provided with a few short setae on the dorsum. Eyes rather small, protuberant. Frontal tubercles distinct, somewhat shorter than the 2nd antennal joint, moderately convex on the inner side. Antennae slender, scarcely provided with hairs; the 1st joint slightly longer than the 2nd; the 3rd not imbricated, without sensoria; the 4th slightly imbricated; the relative length of joints about follows: III-89, IV-57, V-47, VI-96 (36+60) Rostrum rather stout, reaching the middle coxae. Abdomen provided with a few short setae on the dorsum. Cornicles large, stout, distinctly dilated on one side, not imbricated except at the tips, slightly shorter than the 3rd and 4th antennal joints taken together, about twice as long as the cauda, stouter than the cauda. Cauda large, very stout, with 5 or 6 bristles. Legs long; femora more slender than the cornicle; tibiae stouter than the 3rd antennal joint, furnished with many moderately long setae; hind tarsi shorter than the basal part of the last antennal joint.

Length of body—about 2.0 mm. Antenna—about 1.65 mm.

Cornicle—about 0.55.

Amphorophora katoi n. sp.

(Pl. IV, A, figs. 1-6)

Wingless viviparous female

Black. Eyes reddish brown. Antennae pale brownish, slightly dusky at the apices of the 3rd and 4th joints, black on the distal part of the 5th and the 6th. Cornicles and cauda black. Legs almost white to pale brownish, blackish on the apices of femora and tibiae, and tarsi. Body oval. Head on the dorsum provided with 4 very short setae arranged in a transverse row between the eyes and two pairs of much longer setae between the frontal tubercles. These setae are not knobbed. 3 very small ocelli present. Compound eyes normal. Frontal tubercles almost as long as the 2nd antennal joint, on the inner side somewhat convex and furnished with a few setae. Antennae very long and slender, imbricated, with some very short not knobbed setae; the 1st joint much larger than the 2nd, somewhat angulated on the inner side; the 3rd furnished with a very small circular sensorium near the base; the 4th without sensoria; the relative length of joints about as follows: III-140, IV-108, V-92, VI-205 (35 + 170). Rostrum reaching the hind coxae, furnished with many rather fine bristles. Abdomen provided with a few very short setae on the dorsal side, but with some moderately to rather long setae on the ventral surface. Cornicles stout, slightly dilated about the middle, somewhat dilated at the base, imbricated on the distal portion, not reticulated, stouter than femur, almost as long as the 4th antennal joint, a little more than twice as long as the cauda. Cauda almost as stout as the cornicle, tapering, much longer than wide, furnished with 5 very long bristles. Legs very long and slender; tibiae almost as stout as or slightly more so than the 3rd antennal joint, furnished with many rather short stout setae not knobbed; hind tarsi shorter than the basal part of the last antennal joint.

Length of body—about 2.0 mm. Antenna—about 3.0 mm.

Cornicle—about 0.52 mm.

Winged viviparous female

Black. Eyes blackish brown. Antennae almost white, black on the apices of the 3rd and 4th joints, distal part of the 5th, and the 6th. Legs almost white, distal portions of femora and tibiae, and tarsi black. Wings broadly clouded along the veins. Cornicles and cauda black. Frontal tubercles somewhat convex on the inner side. Antennae very long and slender, somewhat imbricated, provided with some very short setae which are not knobbed; the 1st joint much larger than the 2nd, somewhat convex on the inner side, the 3rd provided with from 2-6 medium-sized circular sensoria arranged in a single row mostly on the basal half; the 4th without sensoria; the relative length of joints about as follows: III-105, IV-90, V-82, VI-205 (30+175). Rostrum stout, reaching the middle coxae. Wing-veing stout; the 1st oblique on the front wing almost straight; the 2nd somewhat curved toward the base of the wing on the distal part; the 3rd twice forked, the upper branch extending to the apex of the wing; stigmatic vein strongly curved; hind wings with 1 or 2 obliques which are almost parallel; hooklets 2. Abdomen provided with a few rather short normal setae arranged in a single row on the dorsum of the segment, but with some longer ones not in a single row on the ventral side. Cornicles cylindrical, rather stout, not curved, very slightly swollen about the middle, slightly dilated at the base, narrowest on the distal part, imbricated on the apical portion, not reticulated, almost as long as the 5th antennal joint, slightly more than twice as long as the cauda. Cauda at the base almost as stout as the cornicle, gradually tapering, with 5 or 6 long bristles. Legs long and slender; tibiae slightly more slender than the 3rd antennal joint, provided with many short normal setae; hind tarsi shorter than the basal part of the last antennal joint.

Length of body—about 1.5 mm. Antenna—about 2.6 mm.

Fore wing—about 2.5 mm. Cornicle—about 0.37 mm.

Host.—*Polypodium ellipticum*, attacking the lower side of the leaf.

Distribution.—Formosa: Kagi.

Some apterous viviparous females were collected by Mr. M. Kato on October 23, 1924. Many wingless forms and some winged ones were collected by Mr. K.

Toyota on November 15, 1924.

This species resembles *Fullawayella* in the characters of the corniles, wing-veins, etc., but differs from it in the nature of the frontal tubercles. *Fullawayella kirkaldyi* Full. has never been discovered in Formosa. In Formosa three aphids *A. katoi* Takah., *Myzus woodwardiae* Takah. and *M. polypodicola* Takah., are now known to occur on the Polypodiaceae.

Amphorophora sp.

(Pl. II, B, fig. 2)

Wingless viviparous female

Green, somewhat yellowish. Eyes almost black. Antennae dusky, with the 3rd joint mostly pale brownish. Cornicles pale yellow, with the tips dusky. Cauda pale green. Legs pale brown, apices of tibiae, and tarsi black. Body without distinct hairs. Frontal tubercles distinct, convex on the inner side. Antennae long, slender, imbricated, provided with a few very short setae; the 3rd joint lacking sensoria; the 5th with the sensorium small, the relative length of joints about as follows: III-110, IV-77, V-65, VI-160 (30+130) Cornicles rather stout, somewhat dilated at the base, moderately expanded on the distal half, not imbricated, a little striate at the tip, almost as long as the 4th antennal joint, twice or more times as long as the cauda. Cauda stouter than the cornicle, narrowed on the distal portion, provided with 2 ? pairs of long lateral bristles. Legs very long; tibiae rather stout, more so than the 3rd antennal joint, but much more slender than the cornicle; hind tarsi shorter than the basal part of the last antennal joint.

Host.—*Stellaria aquatica*.

Distribution.—Formosa: Taihoku.

Hitherto unrecorded from Formosa. An apterous specimen was collected by the author on April 13, 1922.

Brevicoryne brassicae L.

Aphididae of Formosa, part 1, p. 38 (1921).

Host.—*Brassica oleracea*.

Distribution in Formosa—Sankakuho (altitude about 7500 feet) in Taichu-prefecture.

Many apterous viviparous females were collected by the author on May 20, 1924, at Sankakuho.

Cavariella japonica Essig et Kuw.

Siphocoryne japonica, Essig and Kuwana. Proc. California Acad. Sc., 4th ser., VIII, 3, p. 66 (1918)

Host.—*Salix sp.*

Distribution—Formosa: Sankakuho (altitude about 7500 feet) in Taichu-prefecture. Japan.

Hitherto unrecorded from Formosa.

A winged viviparous female was collected by the author on *Salix sp.* in May 1924. This aphis was found on *Angelica polymorpha* (Umbelliferae) in Japan and seems to inhabit both the Umbelliferae and *Salix* like the European species, *C. capreae* Fab.

Aphis gossypii Glov.

Syn. *A. tectonae*, van der Goot, Contrib. Fauna Ind. Neerland. 1, 3, p. 111 (1916)

A. shirakii, Takahashi, Aphididae of Formosa, part 1, p. 58 (1921); Philippine Jl. Sc., XXI, no. 5, p. 421 (1922) and Aphididae of Formosa, part 2, p. 109 (1923)

A few winged and apterous females were collected on *Casuarina equisetifolia* at Kagi, Formosa, on May 28, 1924.

I observed many apterous and winged viviparous females on *Tectona grandis* at Kizan, Formosa, on November 1, 1923.

Toxoptera scirpi Pass.

(Pl. II, B, figs 3-8)

Bull. Ent. Soc. Italia, VI, p. 137 (1874); Phillips and Davis, U. S. Dept. Agr. Bur. Ent., Tech. series, 25, pt. 1, p. 8 (1912); Del Guercio, Redia, XII, p. 230 (1917); Mordvilko, Les Pucerons des Graminées, 1, p. 48 (1921) and Bull. Ent. Research, XIII, p. 29 (1922).

Host.—*Scirpus lacustris.*

Distribution—Formosa: Sakuraonsen in Taichu-prefecture. Europe.

Hitherto unrecorded from Formosa.

Many apterous and a winged viviparous females were collected by the author on May 16, 1924.

Genus **Greenidea**

Key to Formosan species

(1) Caudal segment without a process..(2)
—— Caudal segment with a process..(6)
(2) Nymphs white..*G. sp.*
—— Nymphs not white..(3)
(3) The 3rd antennal joint of the winged form stout, provided with 20-25 not circular sensoria often not arranged in a single row..*G. taiwana* Takah.
—— The 3rd joint slender, provided with 10-23 circular sensoria arranged in a single row..(4)
(4) Cornicles very long, almost as long as the body...*G. tenuicorpus* Okaj.
—— Body smaller. Cornicles not so long..(5)
(5) Sensoria on the 3rd antennal joint distributed over the whole length..*G. tattakana* n. sp.
—— Sensoria on the 3rd antennal joint not distributed on the distal portion..*G. nigrofasciata* Maki.
(6) The 3rd antennal joint of the winged form provided with about 30 or more, not circular, sensoria not arranged in a single row..........(7)
—— The 3rd antennal joint with fewer cicular sensoria arranged in a single row..(8)
(7) The 3rd joint with about 55 sensoria................*G. mushana* n. sp.
—— The 3rd joint with about 30 sensoria. Body smaller..*G. formosana* Maki.
(8) The distal part of the 6th antennal joint very slightly longer than the 3rd..*G. mangiferae* n. sp.
—— The distal part shorter than the 3rd..(9)
—— The distal part much longer than the 3rd..(10)
(9) Body black..*G. nigra* Maki.
—— Dark brown..*G. kuwanai* Perg.
(10) Apterous form greenish..(11)
—— Apterous form brownish..................................*G. ficicola* Takah.

(11) Cornicles with the surface reticulated. ....*G. quercifoliae* Takah.
—— Cornicles not striate nor reticulated..................*G. myricae* n. sp.
(The winged form of *G. quercifoliae* Takah. is not known).

Greenidea kuwanai Perg.

Trichosiphum kuwanai, Pergande, Ent. News, p. 209 (1906); Okajima, Bull. Coll. Agr. Tokyo Imp. Univ., VIII, 1, p. 2 (1908); Essig and Kuwana, Proc. California Acad. Sc., 4th series VIII, 3, p. 97 (1918): Takahashi, Dobutsugaku Zasshi (Zool. Mag. Tokyo), No. 359, p. 368 (1918): Kurisaki, Dobutsugaku Zasshi, No. 386, p. 379 (1920).

Greenidea kuwanai, Takahashi, Proc. Ent. Soc. Washington, XXI, 7, p. 174 (1919) and Aphididae of Formosa, pt. 2, p. 117 (1923).

Host.—*Quercus stenophylloides,* attacking the young shoot.

Distribution.— Formosa: Sakuragamine (altitude about 8000 feet) in Taichu-prefecture. Japan. Siberia.

Hitherto unrecorded from Formosa.

Many apterous viviparous females were collected by the author on May 20, 1924. These specimens agree exactly with those from Japan.

Greenidea tattakana n. sp.

(Pl. III, B, figs. 1-3)

Closely allied to *G. nigrofasciata* Maki, differing from it, however, in the following characters:

Wingless viviparous female

(1) Hairs on the body somewhat shorter, less stout.

(2) Antennae shorter, with the hairs fewer and somewhat shorter.

(3) The 3rd antennal joint shorter. The relative length of antennal joints about as follows: III-80, IV-36, V-45, VI-85 (35+50) (In *G. nigrofasciata*, III-115, IV-45, V-50, VI-33+59).

(4) Cornicles shorter, with somewhat shorter hairs.

Length of body—about 2.4 mm. Antenna—about 1.25 mm.
Conicle—about 0.65 mm.

Winged viviparous female

(1) Abdomen almost dusky on the dorsum except on the basal portion which

is green, with some dusky patches.

(2) Antennae shorter, with the bristles much fewer and somewhat shorter.

(3) The 3rd antennal joint shorter, provided with 11-13 sensoria over the whole length (In *nigrofasciata*, this joint provided with about 10-13 sensoria over the basal two-thirds or three-fourths). The relative length of antennal joints about as follows: III-105, IV-44, V-50, VI-93 (37+56). (In *nigrofasciata*, III-155, IV-63, V-60, VI-32+62).

(4) Hairs on the cornicles and legs somewhat shorter.

(5) Front wings not clouded along the 1st oblique and stigmatic vein which are not stouter than other obliques. Stigmatic vein almost moderately curved. (In *nigrofasciata*, front wings very slightly clouded along the 1st oblique and stigmatic vein which are somewhat stouter than other obliques; stigmatic vein very slightly curved, extending to the apex of the wing).

Length of body—about 2.5 mm.	Antenna—about 1.8 mm.
Cornicle—about 1.03 mm.	Fore wing—about 3.0 mm.

Caudal segment rather small, rounded, provided with many very long bristles, without a process. Anal plate larger than the caudal segment, broadly rounded, irregularly reticulated, with many very long bristles.

Host.—*Quercus serrata, Quercus stenophylloides, Castanea formosana.*

Distribution.—Formosa: Tattaka and Sakuragamine in Taichu-prefecture.

Numerous viviparous females were collected by the author on May 17, 19 and 20, 1924.

Greenidea myricae n. sp.

(Pl. III, A, figs. 3-4).

Wingless viviparous female

Green. Cornicles dusky on the distal portion. Body in general shape as in *Greenidea kuwanai* Perg., provided with many very long stiff bristles, some of which are furnished with a few very small branches at the tip. Head fused with the pronotum, on the dorsum provided with about 10 stout bristles which are almost as long as the 1st antennal joint. Front broad, almost straight. Ocular tubercles very distinct. Antennae striate or imbricated, provided with some very slightly or scarcely knobbed bristles which are almost as long as those on the head; the 3rd joint furnished with about 10 very long and some shorter bristles, without sensoria; the relative length of joints about as follows: III-108, IV-63, V-67, VI-180 (54+126). Rostrum reaching beyond the hind coxae. Abdomen nearly circular in outline. Cornicles long, almost as long as or a little longer than the 6th antennal joint, moderately narrowed toward each end, broadest at the portion near the base, scarcely curved, almost as stout as the front femur, provided with numerous very long stiff bristles which are longer than those on the body and not capitate nor branched; the base somewhat stouter than the apex, the apical portion provided with many minute spinules. Caudal segment with a distinct process, provided with some very long bristles. Anal plate almost as broad as the caudal segment, very slightly sinuated at the middle of the posterior margin, provided with many wax-pores ? and very long bristles. Legs slender, provided with many rather long setae; tibiae almost as stout as the 3rd antennal joint; tarsi somewhat imbricated; hind tarsi much shorter than the basal part of the last antennal joint.

Length of body—about 2.5 mm. Antenna—about 2.25 mm.

Cornicle—about 0.85 mm.

Winged viviparous female

Green. Cornicles black. Body elongate. Head on the dorsum and front provided with more than 10 very long bristles, of which those on the front are longer and almost as long as or a little longer than the 1st antennal joint. Ocular tubercles distinctly protruding. Antennae black, striate or imbricated, provided with many long stiff bristles, some of which are longer and almost as long as those on the head; the 3rd joint provided with about 20 medium-sized or rather large circular or oval sensoria arranged in a single row over the whole length except on the distal portion; the 4th without sensoria; the relative length of joints about as follows: III-164, IV-90, V-93, VI-240 (67+173). Rostrum slender, reaching a little beyond the hind coxae. The 1st oblique on the front wing very slightly curved, the 2nd very strongly curved on the distal part, the 3rd twice forked, obsolete at the base; stigma not elongate; stigmatic vein moderately curved; hind wings with 2 divergent obliques; hooklets 5. Abdomen provided with some bristles arranged in a transverse row on the dorsum of each segment; these hairs shorter than those on the head and thorax, not capitate nor branched as in other hairs on the body.

Cornicles very long and slender, cylindrical, very slightly or scarcely narrowed on each end, somewhat imbricated, almost as stout as the front tibia, almost as long as the 4th, 5th and 6th antennal joints taken together, provided with numerous very long stiff bristles which are longer than those on the head; the distal portion furnished with minute spinules. Caudal segment with a process, provided with many very long bristles. Anal plate almost as broad as the caudal segment, slightly sinuated on the posterior margin, reticulated, with many very long bristles. Legs slender, with many long setae; hind legs longer than the cornicle.

Length of body—about 2.3 mm.	Antenna—about 3.0 mm.
Fore wing—about 3.1 mm.	Cornicle—about 1.9 mm.

Host.—*Myrica rubra*, attacking the young leaf.

Distribution.—Formosa: Tattaka in Taichu-prefecture (altitude about 7330 feet). A winged and many apterous viviparous females were collected by the author on May 17, 1924.

Greenidea mangiferae n. sp.

Wingless viviparous female

Head fused with the pronotum, very broad and straight on the front margin, the dorsal surface furnished with about 10 long stout hairs which are a little shorter than the basal 2 antennal joints taken together and provided with a few minute branches at the tip. Eyes distinctly protuberant, with prominent ocular tubercles. Antennae long and slender, provided with some long hairs which are almost as long as those on the dorsum of the head; the 3rd joint somewhat imbricated, without sensoria; the relative length of joints about as follows: III-95, IV-59, V-62, VI-50+ ? Rostrum slender, reaching a little beyond the hind coxae. Thorax wider posteriorly, furnished with many long stout hairs, the ventral surface with numerous granules. Abdomen almost circular in outline, rather strongly chitinized, provided with many very long stout hairs, which are almost as long as the basal 2 antennal joints taken together and furnished with a few minute branches at the tip. Cornicles long, a little narrowed toward the both ends, narrowest on the distal portion, very slightly curved, about 8 times as long as wide, almost as long as the 3rd and 4th antennal joints taken together, reticulated except on the basal and distal portions, provided with many long hairs which are longer than, but not so stout as, those on the abdomen, with no branches at the apex, the distal portion with numerous spinules. Caudal segment with a process, furnished with 4 pairs of long bristles on the hind margin. Anal plate broadly rounded, with a reticulated area at the middle, provided with some very long hairs. Legs slender, furnished with many hairs which are shorter and more slender than those on the body; hind tibiae somewhat striate, almost as slender as the 3rd antennal joint; hind tarsi much shorter than the basal part of the last antennal joint.

Length of body—about 2.0 mm. Antenna—about ? mm.

Cornicle—about 0.9 mm.

Winged viviparous female

Head with about 10 long bristles on the dorsum, some of which are longer and almost as long as the 1st antennal joint. Antennae long and slender, with some long stout hairs which are somewhat longer than those on the head; the 3rd joint somewhat imbricated, provided with about 13 (from 9-15) rather or very small circular sensoria arranged in a single row over the basal three-fourths, the 4th without sensoria; the relative length of joints about as follows: III-110, IV-65, V-64, VI-172 (49+123). Rostrum slender, reaching a little beyond the hind coxae. Thorax with many very long hairs on the dorsum which are almost as long as those on the head. Wing-veins almost as in *G. artocarpi* Westw.; hooklets 3. Abdomen with some hairs on the dorsum which are much shorter than those on the head and thorax. Cornicles very long and slender, cylindrical, almost as stout as the hind femur, not narrowed at the base nor expanded at any portion, very slightly narrowed at the tip, almost straight or slightly curved, a little longer than the 3rd, 4th and 5th antennal joints taken together, provided with many quite long hairs which are almost as long as the basal part of the last antennal joint, with many spinules on the distal portion. Caudal segment almost conical when seen from above, with a process. Anal plate almost as wide as the caudal segment, almost straight on the hind margin, with many very long hairs. Legs very long and slender, provided with many long hairs; tibiae striate.

Length of body—about 2.35 mm. Antenna—about 2.75 mm.

Fore wing—about 3.0 mm. Cornicle—about 1.8 mm.

Cornicles black, with the bases paler in the apterous form, but in the winged black, with the tips paler. Antennae black in the winged form. Probably yellowish brown, with the abdomen darker, in the apterous form.

Host—*Mangifera indica.*

Distribution.—Formosa: Kagi.

Some specimens were collected by Mr. K. Toyota in March, 1925, in the garden of the Agricultural Experiment Station at Kagi, Formosa.

Greenidea mushana n. sp.

(Pl. II, B, fig. ,11 and Pl. III, A, fig. 1)

Winged viviparous female

Blackish brown. Cornicles black. Stigma on the wing blackish brown. Body large, provided with many very long bristles that are not capitate. Head short, about twice as wide as long between the eyes, the dorsal surface provided with numerous very long bristles which are longer than the 1st antennal joint. Frontal tubercles almost lacking. Eyes normal, with distinct ocular tubercles. Antennae furnished with many very long bristles which are almost as long as those on the head; the 3rd joint provided with about 55 sensoria that are oval or irregular in shape, somewhat transversely narrowed, of various sizes, somewhat protuberant, scattered over the whole length except on the distal portion; the 4th somewhat striate, without sensoria; the 5th with about 5 very long bristles, the sensorium circular, of medium size; the 6th provided with about 2 very long bristles on the basal part; the relative length of joints about as follows: III-65, IV-25, V-23, VI-57 (19+38). Rostrum slender, reaching beyond the hind coxae. The 1st oblique on the front wing very slightly curved, the 2nd strongly curved on the distal part, the 3rd twice forked, obsolete on the basal portion; stigma not elongate, stigmatic vein somewhat curved; hind wings with 2 divergent obliques; hooklets 5. Cornicles very long and slender, cylindrical, very slightly or scarcely curved, somewhat narrowed on the distal portion, much stouter than the femur, longer than the hind tibia, a little shorter than the antenna, covered with numerous very long bristles which are longer than those on the head, the distal portion provided with numerous minute setae. Legs slender, furnished with many very long bristles; tibiae almost as stout as the 3rd antennal joint; hind tarsi shorter than the basal part of the last antennal joint. Caudal segment with a small process, provided with many very long bristles. Anal plate larger than the cauda, reticulated on the middle area, with many very long bristles.

Length of body—about 4.0 mm.	Antenna—about 3.25 mm.
Fore wing—about 4.75 mm	Cornicle—about 2.7 mm.

Host.—*Quercus sp.*, attacking the young shoot.

Distribution.—Formosa: Tattaka near Musha in Taichu-prefecture (altitude about 7330 feet).

A single specimen was collected by the author on May 17, 1924. This species differs from other species of *Greenidea* in possessing more sensoria on the 3rd antennal joint.

Greenidea sp.

Host.—*Quercus sp.*

Distribution.—Formosa: Tattaka near Musha.

Two nymphs were collected by the author on May 18, 1924. These nymphs are white in general colour, with white cornicles, and seem to represent a species distinct from others known to occur in Formosa.

Cervaphis quercus Takah.

The cornicle figured in the former paper, Aphididae of Formosa, part 2 (Plate V, B, fig. 6) is abnormal. The cornicle of the apterous form is usually almost as in the winged form (Aphididae of Formosa, part 3, plate VIII, B, fig. 7).

Lachnus niitakayamensis n. sp.

Winged viviparous female

Head, antennae and thorax black. Legs black, paler on the bases of femora. Abdomen greenish black in specimens preserved in alcohol. Wings without markings. Head divided, furnished with numerous long rather fine hairs, of which those on the front are somewhat longer, almost as long as the 1st antennal joint. Eyes distinctly protuberant, with the ocular tubercles very small. Antennae covered with numerous, long, very stout bristles which are almost as long as those on the front of the head; the 3rd joint almost as stout as the front tibia, furnished with more than 100 very small, protuberant, circular sensoria scattered over the whole length; the 4th and 5th each furnished with about 43 similar sensoria scattered over the whole length; primary sensorium on the 5th or 6th very large, circular; the 6th furnished with about 6-8 small sensoria scattered over the basal part, the flagellum with some short setae at the tip; the relative length of joints about as follows: III-160, IV-59, V-67, VI-69 (43+26). Rostrum lance-like, reaching beyond the hind coxae. Wings imbricated: subcosta on the front wing provided with form 10-12 minute sensoria in a group near the base and 2 or 3 small ones; stigma normal, furnished with about 20 long setae not arranged in a row: the 1st oblique straight: the 2nd somewhat curved; the 3rd faint, obsolete at the base, once forked; stigmatic vein very slightly curved, extending to the tip of the wing: hind wings with 2 divergent obliques; hooklets 4. Abdomen on the dorsum furnished with some small groups of dusky wax-pores and numerous very small dusky spots, from each of which spots a bristle arises. These pores and spots are visible in specimens treated with caustic potash. Cornicles on moderately large cones which are furnished with numerous longer bristles. Cauda semicircular in outline when seen from above, provided with numerous very long bristles. Anal plate normal. Legs very long, covered with numerous very long stout bristles; hind tibiae almost as long as the 5th antennal joint, the 2nd tarsal joint almost 3 times as long as the 1st.

Length of body—about 3.2 mm.	Antenna—about 2.0 mm.
Fore wing—about 5.0 mm.	Hind tibia—about 2.5 mm.

Host.—unknown. Perhaps a plant of the Coniferae.

Distribution.—Formosa: Niitakayama.

Two winged forms were collected by Mr. J. Sonan at Kanko (altitude about 8300 feet) on the Mount Niitaka on September 17, 1924. This species is very peculiar in possessing numerous small sensoria on the antennae, in this respect resembling the males of some Lachnina.

Dilachnus orientalis n. sp.

Wingless viviparous female

Blackish brown, shining, not covered with white wax. In specimens treated with caustic potash, antennae dusky at the apices of the 3rd, 4th and 5th joints and on the 6th, abdomen on the dorsum with some dark brown patches on the hind portion and some small similar spots, front and middle tibiae black on the both ends and the middle portion, hind femora black on the distal half, hind tibiae black, with the portion near the base pale brownish, cornicles, cauda and anal plate dark brown.

Body oval, covered with many long bristles. Head divided, with many rather stout hairs, of which those on the front are somewhat longer and almost as long as the 1st antennal joint. Antennae rather slender, almost as long as the front tibia, with many long bristles which are almost as long as those on the head; the 3rd joint provided with 1 or 2 medium-sized circular sensoria on the distal portion; the 4th with 1 or 2 similar ones on the distal half; the 5th with a similar one near the primary sensorium which is not very large; the relative length of joints about as follows: III-140, IV-54, V-65, VI-46. Rostrum slender, reaching beyond the hind coxae. Cornicles on large hairy cones. Cauda very short, rounded, with many very long bristles. Anal plate larger than the cauda, broadly rounded, with many very long bristles. Legs very long, covered with many very long bristles; tibiae much stouter than the antenna; hind tarsi longer than the 5th, but shorter than the 3rd, antennal joint; the 2nd tarsal joint about twice as long as the 1st.

Length of body—about 4.5-5 mm. Antenna—about 1.6 mm.
Hind tibia—about 3.0 mm.

Winged viviparous female

In a specimen treated with caustic potash, antennae dusky, abdomen with some small dusky spots on the dorsum, femora blackish except on the basal portions, tibiae almost as in the apterous form, cornicles, cauda and anal plate dark brownish. Body oblong, covered with many long rather fine bristles. Head divided, with many very long hairs which are a little longer than the 1st antennal joint. Antennae covered with many very long bristles which are somewhat stouter than, but almost as long as, those on the head; the 3rd joint provided with 15-18 medium-sized to very large circular or oval sensoria over the whole length arranged in a single row; the 4th with 3 or 4 very small or large circular sensoria over the whole length; the 5th with 2 sensoria, the primary sensorium very large; the relative length of joints about as follows: III-168, IV-58, V-74, VI-48. The 1st oblique on the front wing straight; the 2nd somewhat curved; the 3rd faint, obsolete at the base, twice forked; stigma large, not elongate at the apex; stigmatic vein stout, almost straight, reaching the apex of the wing; hind wings with 2 divergent obliques; hooklets 5. Cornicles situated on hairy cones which are smaller, but higher than those of the apterous form. Cauda and anal plate almost as in the apterous form. Legs long, rather slender, covered with many very long hairs; tibiae much stouter than the antenna; front tibiae almost as long as the antenna; hind tarsi slightly longer than the 5th antennal joint, the 2nd tarsal joint about twice as long as the 1st.

Length of body—about 4.5 mm. Antenna—about 1.8 mm.
Fore wing—about 5.25 mm. Hind tibia—about 3.25 mm.

Hairs on the body of the winged form longer and more slender than those of the apterous form.

Host.—*Pinus sp.*

Distribution.—Formosa: Sakuragamine (altitude about 8000 feet) in Taichu-prefecture.

Some apterous and a winged viviparous females were collected by the author on May 20, 1924.

In the specimens treated with caustic potash, some small dusky spots are visible on the dorsum. These spots are groups of very small wax-pores which are rather irregular in shape. Each group is composed of about from 10 to 20 wax-pores.

Dilachnus taiwanus n. sp.

Wingless viviparous female

Blackish brown, shining, not covered with white wax. In specimens treated with caustic potash, body with some small dusky spots on the dorsum, antennae dusky at the apex of the 5th joint and on the 6th, femora dusky on the distal half, tibiae black, brownish on the portion near the base, tarsi black, cornicles, cauda and anal plate almost blackish brown.

Body oval, covered with many long fine hairs. Head divided, with many long fine hairs which are not erect, longer than the 1st antennal joint. Eyes with small ocular tubercles. Antennae rather slender, with many long fine hairs which are not erect, almost as long as those on the head; the 3rd and 4th joints without sensoria; the 4th almost as long as the hair on the antenna; the 5th with the apical sensorium very large; the 6th with about 6 sensoria near the primary one; the relative length of joints about as follows: III-110, IV-40, V-53, VI-48. Rostrum slender, reaching a little beyond the hind coxae. Cornicles on conspicuous hairy cones. Cauda broadly rounded, with many long stout bristles. Aanl plate larger than the cauda, with many long stout bristles.

Legs long and rather stout, covered with many very long fine hairs; tibiae much stouter than the antenna, front tibiae slightly shorter than the antenna; hind tarsi shorter than the 3rd, but longer than the 5th antennal joint, the 2nd tarsal joint almost thrice as long as the 1st.

Length of body—about 3.8 mm. Antenna—about 1.4 mm.

Hind tibia—about 1.9 mm.

Winged viviparous female

Legs black, except on the bases of femora. In a specimen treated with caustic potash, antennae dusky on the apices of the 3rd, 4th and 5th joints, and the 6th, abdomen with some small dusky spots.

Body covered with many very long fine hairs. Antennae rather slender, almost as long as the front tibia, covered with many very long hairs which are a little shorter than the 4th joint and somewhat stouter than those on the body; the 3rd joint provided with 4 or 5 rather large circular sensoria on the distal half arranged in a single row; the 4th with 2 similar sensoria; the 5th with or without a secondary sensorium near the very large usual one; the 6th with some sensoria near the larger one; the relative length of joints about as follows: III-112, IV-50, V-65, VI-55.

The 1st oblique on the front wing stouter than the 2nd, straight; the 2nd very slightly or scarcely curved; the 3rd faint, twice forked; stigma large, not elongate at the distal end; stigmatic vein very slightly or scarcely curved, extending to the apex of the wing; hind wings with 2 divergent obliques; hooklets 5. Legs very long, stout, much stouter than the antenna, covered with many very long hairs; hind tarsi shorter than the 3rd, but longer than the 5th antennal joint, the 2nd tarsal joint about 3.5 times as long as the 1st.

Length of body—about 4.2 mm. Antenna—about 1.5 mm.

Fore wing—about 4.75 mm. Hind tibia—about 2.6 mm.

Host.—*Tsuga formosana.*

Distribution.—Formosa: Sakuragamine (altitude about 8000 feet) in Taichu-prefecture.

Some apterous and a winged viviparous females were collected by the author on May 20, 1924.

Dilachnus formosanus Takah.

Aphididae of Formosa—3, p. 73 (1924).

Dilachnus sp. Takahashi, Aphididae of Formosa—2, p. 46 (1923).

Wingless viviparous female

Dark brown, somewhat yellowish, not covered with white wax. Legs black, brownish on the bases of femora and the portions near the bases of tibiae. In specimens treated with caustic potash, antennae dusky on the apex of the 3rd joint and the 4th, 5th and 6th, abdomen with some dark brown spots, cornicles, cauda and anal plate dark brown.

Body oval. Head divided, provided with many very stout erect hairs, of which those on the front are a little longer, but somewhat shorter than the 2nd antennal joint. Antennae slender, a little shorter than the front tibia, provided with some very stout erect setae which are somewhat shorter than those on the head; the 3rd and 4th joints without sensoria; the 5th provided with a small or medium-sized circular sensorium near the apical primary one that is not very large; the relative length of joints about as follows: III-170, IV-68, V-65, VI-51.

Rostrum slender, reaching beyond the hind coxae. Abdomen provided with many moderately long bristles. Cornicles situated on large hairy cones, the hairs on which are longer than those on the abdomen. Cauda very short, rounded, with many very long bristles. Anal plate larger than the cauda, furnished with many very long bristles. Legs long, stout, provided with many very stout setae; tibiae much stouter than the antenna; hind tarsi shorter than the 3rd antennal joint, the 2nd tarsal joint about twice as long as the 1st.

Length of body—about 5.5 mm. Antenna—about 2.0 mm.

Hind tibia—about 4.2 mm.

Winged viviparous female

In a specimen treated with caustic potash, antennae black, paler on the basal half of the 3rd joint, head and thorax blackish, abdomen with some brownish spots, femora black except on the bases, tibiae black at the base and on the distal half, cornicles, cauda and anal plate dark brownish.

Head divided, with many very stout bristles, of which those on the front are somewhat longer, almost as long as the 2nd antennal joint. Antennae slender, shorter than the middle tibia, provided with some erect very stout setae which are shorter than the 2nd antennal joint, much shorter than the hairs on the head; the 3rd joint provided with 12-13 medium-sized or rather large circular sensoria arranged in a row over the whole length except on the base; the 4th with 2 similar sensoria on the distal half; the 5th with a medium-sized sensorium near the primary one that is not very large; the relative length of joints about as follows: III-175, IV-75, V-65, VI-50. Wings long; the 1st oblique on the front wing straight; the 2nd scarcely or very slightly curved; the 3rd faint, twice forked; stigma normal; stigmatic vein scarcely curved, extending to the tip of the wing; hind wings with 2 divergent obliques; hooklets 6. Abdomen provided with many moderately long bristles, those on the last segment much longer. Cornicles on hairy cones. Legs long, rather slender, provided with many long very stout erect setae; tibiae much stouter than the antenna; hind tarsi longer than the 4th, but shorter than the 3rd antennal joint; the 2nd tarsal joint about twice as long as the 1st.

Length of body—about 5.5 mm. Antenna—about 2.0 mm.
Fore wing—about 6.4 mm. Hind tibia—about 4.3 mm.

Hairs on the head somewhat longer than those of the apterous form.

Host.—*Pinus sp.*, attacking the twig.

Distribution.—Formosa; Shinten near Taihoku, Hori and Tattaka (altitude about 7330 feet) in Taichu-prefecture.

Some apterous and a winged viviparous females were collected by the author at Tattaka and Hori in May, 1924.

The above description was made from the specimens from Tattaka. These specimens differ from the type specimens of this aphid in the larger body, as well as in that the 4th antennal joint of the winged form is somewhat longer than the 5th. An apterous female, collected by the author at Shinten near Taihoku on April 27, 1924, is porvided with one or two medium-sized sensoria about midlength of the 3rd antennal joint.

Dilachnus liquidambarus n. sp.

Winged viviparous female

Head, eyes, antennae, thorax, cornicles, cauda, coxae, tibiae and tarsi black. Distal halves of front and middle femora and apices of hind femora black, the remaining parts of femora reddish brown. Wings hyaline, very slightly clouded along the 1st and 2nd obliques and below the subcosta of the front wing; narrowly blackish brown on the distal part of the anterior margin of the front wing (this part is adjacent to the stigma); stigma almost black; subcosta almost black, with yellowish brown bases; other veins brownish. Abdomen brownish, with 3 large black patches on each side in front of the cornicle.

Body large, covered with many very long rather fine bristles. Head much wider than long, divided, provided with many long bristles which are almost as long as the 2nd antennal joint. Eyes protuberant, with small ocular tubercles. Antennae covered with many very long bristles which are almost as long as those on the head: the 2nd joint very slightly shorter than the 1st; the 3rd provided with about 18 circular, somewhat protuberant sensoria, most of which are of medium size or rather small, arranged not in a single row along the whole length except on the basal portion; the 4th with about 5 similar sensoria arranged in a single row; the 5th with only a large circular sensorium at the tip; the relative length of joints about as follows: III-145, IV-60, V-65, VI-42. Rostrum reaching the middle coxae. Wings soft; subcosta on the front wing stout, with about 7 minute sensoria near the base; the 1st and 2nd obliques stout, very closely arising, scarcely curved; the 3rd oblique not faint, but thinner than the 1st and 2nd, a little obsolete at the base, twice forked on the left, thrice forked on the right, the upper branch nearly extending to the apex of the wing; stigma long, elongated on the distal portion; stigmatic vein almost as stout as the 3rd oblique, scarcely curved, extending to the tip of the wing; hind wings with 2 divergent obliques; hooklets 5. Bristles on the dorsum of abdomen a little longer than those on the head. In a specimen treated with caustic potash, a few small black spots are visible on the abdomen. Cornicles rather small, situated on high hairy cones. Cauda almost semicircular. Anal plate rounded. Legs very long, covered with many stouter bristles, some of which are longer and almost as long as those on the abdomen; tibiae much stouter than the antenna; hind tibiae somewhat tapering; hind tarsi a little longer than the 5th antennal joint, the 2nd tarsal joint almost twice as long as the 1st.

Length of body—about 7.5 mm.	Antenna—about 2.2 mm.
Fore wing—about 7.7 mm.	Hind tibia—about 6.2 mm.

Host.—*Liquidambar formosana.*

Distribution—Formosa: Nanto in Taichu-prefecture.

A single specimen was collected by Mr. J. Sonan on the plant above mentioned in February 1925. This aphis is peculiar in some characters of the wings and is not a typical *Dilachnus.*

Stomaphis liquidambarus n. sp.

Wingless viviparous female

Almost blackish on the dorsum, with 5 dusky spots arranged in a longitudinal row on the ventral side. Antennae, eyes, cornicles, cauda, femora and tarsi blackish. Tibiae brownish black, with the apices black. Body oblong, covered with many fine hairs. Head very short, much wider than long, divided, provided with many hairs which are shorter than the 2nd antennal joint. Eyes small, not protuberant, with the ocular tubercles somewhat protruding. Antennae more slender than the tibia, covered with many fine hairs which are slightly shorter than those on the head; the 1st joint much larger than the 2nd; the 3rd provided with from 1-8 circular sensoria which are not protuberant, rather or very small, and arranged in a single row over the whole length except on the basal portion; the 4th with 4-6 medium sized or rather small sensoria arranged in a single row; the 5th with a very large circular sensorium at the apex which is not surrounded by a row of hairs; the 6th with a large oval sensorium and some very small circular ones; the relative length of joints about as follows: III-114, IV-51, V-60, VI-76. Rostrum very long, reaching beyond the apex of the abdomen. Hairs on the abdomen longer. Cornicles small, situated on very shallow cones. Legs slender, covered with many hairs which are shorter than those on the abdomen; hind tarsi long, rather slender, a little shorter than the 3rd antennal joint, provided with many longer hairs, the 2nd tarsal joint (excluding claws) about 4 times as long as the 1st.

Length of body—about 5.2 mm. Antenna—about 2.3 mm.
Hind tibia—about 2.0 mm.

Winged viviparous female

Head, eyes, antennae, thorax, cornicles and cauda black. Legs black, tibiae brownish. Wings clouded along the veins. Body oblong, covered with many fine hairs. Antennae covered with many fine hairs; the 1st joint much larger than the 2nd; the 3rd provided with from 14-18 circular or oval, not protuberant sensoria, most of which are very large, arranged in a single row along the whole length; the 4th provided with from 4-6 large circular sensoria arranged in a single row along the whole length except on the basal portion; the 5th furnished with a very large circular sensorium at the tip; the 6th with a large oval sensorium and some very small circular ones; the relative length of joints about as follows: III-118, IV-51, V-58, VI-74. Rostrum reaching beyond the end of the abdomen. Wings narrow, with stout veins; front wings provided with about 5 minute sensoria in a row on the basal part of the subcosta; the 1st oblique very stout, moderately curved; the 2nd distinctly curved on the distal portion; the 3rd not obsolete at the base, once branched, the upper branch extending near the apex of the wing; stigma stout: stigmatic vein moderately curved; hind wings with 2 divergent obliques; hooklets 5. Cornicles small, on hairy cones which are higher than in the apterous form. Cauda almost semicircular. Anal plate rounded. Legs slender, covered with fine hairs: hind tarsi long, slender, a little longer than the 6th antennal joint, provided with longer hairs, the 2nd tarsal joint almost 4 times as long as the 1st.

Length of body—about 4.7 mm.	Antenna—about 2.2 mm.
Fore wing—about 4.3 mm.	Hind tibia—about 2.1 mm.

Host.—*Liquidambar formosana*, attaking the stem.

Distribution—Formosa: Nanto in Taichu-prefecture.

Some specimens protected by ants were collected by Mr. J. Sonan in February, 1925. This aphis is easily distinguishable from other *Stomaphis* by the slender hind tarsi.

Anoecia sp.

Host.—unknown.

Distribution.—Formosa: Niitakayama.

A winged viviparous female with broken antennae was collected by Mr. J. Sonan at Hattsukan on September 12, 1924. The body, wings and legs of this specimen exactly agree with those of *Anoecia corni* Fab. The genus *Anoecia* is new to Formosa.

Myzocallis mushensis n. sp.

(Pl. II, B. figs. 9-10)

Winged viviparous female

Pale yellow. Head and pronotum with 3 longitudinal brown stripes. Body narrow, soft, almost without hairs. Head somewhat protruding above the front ocellus, with a pair of very short blunt tubercles between the antennae. Frontal tubercles lacking. Eyes large, with ocular tubercles Antennae very long and slender, provided with a few very short hairs; the 1st joint a little larger than the 2nd; the 3rd dusky, paler at the base, a little shorter than the front tibia, stouter than the 4th and subsequent joints, provided with about 40 sensoria which are transversely narrowed, occupying half the circumference of the joint and regularly arranged over the whole length in a single row; the 4th dusky at the apex, without sensoria; the 5th dusky at the distal portion; the 6th dusky at the apex and middle; the relative length of joints about as follows: III-148, IV-50, V-47, VI-51 (26+25). Rostrum rather stout, reaching the middle coxae. The 1st and 2nd obliques on the front wing curved; the 3rd obsolete at the base, twice forked; stigmatic vein faintly indicated; hind wings with 2 very slightly divergent obliques; hooklets 3. Basal 2 abdominal segments each on the dorum with a pair of small blunt dusky tubercles which are subequal in size; the 3rd, 4th, 5th and 7th segments each on the dorsum with a pair of smaller similar tubercles which are almost subequal in size; the 6th and 8th each at the middle of the dorsum with a pair of very small similar tubercles, of which those on the 8th are smaller; basal 4 segments each near the side with a very short blunt tubercle that is dusky excepting that on the 3rd segment. Cornicles dusky, small, very slightly or scarcely constricted at midlength, somewhat expanded at the base, almost as long as wide at midlength. Cauda constricted at the base, with some very long bristles. Anal plate bilobed, each lobe somewhat narrower than the cauda, with some very long bristles. Legs slender, furnished with many moderately to rather long setae; tibiae almost as stout as the 3rd antennal joint; hind tarsi almost as long as the basal part of the last antennal joint.

Body—about 2.0 mm. Antenna—about 1.7 mm.

Fore wing—about 2.5 mm.

Host.—*Zelkowa formosana*, attacking the young leaf.

Distribution.—Formosa: Musha and Baikei in Taichu-prefecture.

Some specimens were collected by the author and Miss. Rubikdon on May 15, 1924.

This species is easily distinguishable from *M. zelkowae* Takah. (Proc. Ent. Soc. Washington, XXI, 7, p. 174) by the longer 3rd antennal joint which is provided with more sensoria, as well as by the dusky cornicles. The basal 2 antennal joints seem to be somewhat dusky.

Myzocallis sasae Mats ?

Jl. Coll. Agr., Tohoku Imp. Univ., VII, pt. 6, p. 372 (1917).

Winged viviparous female

Differs from *M. bambusifoliae* Takah. in the following points:

(1) Green, head and thorax very slightly brownish, with no spots and stripes on the dorsum of body.

(2) The 3rd antennal joint black on the apical part and slightly dusky on the basal part; the 4th black on the distal half; the 5th and 6th blackish; sensoria on the 3rd somewhat larger.

(3) Body, antennae and legs a little shorter.

Host.—*Bambusa sp.*

Distribution.—Formosa: Taihoku. Japan.

Hitherto unrecorded from Formosa.

A few winged viviparous females were collected by the author on March 9, 1924, at Taihoku.

The 3rd antennal joint of the winged viviparous female is provided with about 4-7 subcircular or oval sensoria arranged in a single row on the basal portion; and the relative length of the antennal joints is about as follows: III-147, IV-93, V-79, VI-82 (45+37).

Length of body—about 2.0 mm. Antenna—about 1.75 mm.

Fore wing—about 2.5 mm.

Oregma tattakana n. sp.

(Pl. III, B, figs. 7-8)

Wingless viviparous female

Almost black, somewhat covered with a powder, and with a somewhat purplish tinge. (Nymph yellowish). Body provided with many long fine hairs that are longer than the 3rd antennal joint. Head fused with the prothorax. Horns large, very stout, almost as long as or a little longer than the 1st antennal joint, almost as stout as the 2nd antennal joint, not expanded at the base, not narrowed toward the apex, but sometimes very slightly narrowed toward the base, broadly rounded at the apex, a little longer than wide, far separated from each other, with a few fine hairs. Eyes composed of 3 facets. Antennae very short, rather stout, 4-jointed, almost as long as the front tibia, with a few fine hairs that are much shorter than those on the head; the 3rd joint narrowed toward the base, the sensorium very small; the 4th almost as long as the basal 2 joints taken together; the relative length of joints about as follows: III-18, IV-16.

Rostrum short, stout, nearly reaching the middle coxae. Meso-and metathoraci and the 1st abdominal segment well defined; the 2nd and subsequent 5 abdominal segments fused together. Cornicles small, very short, not situated on cones. Cauda very small, slightly constricted at the base, provided with a few bristles. Anal plate small, bilobed, with a few bristles. Tibiae almost as stout as the distal portion of the 3rd antennal joint, provided with some very long fine hairs; tarsi not imbricated; hind tarsi as long as or slightly longer than the 3rd antennal joint. Wax-pores not well developed, but numerous, small, circular or oval, scattered over the dorsum of the body, not transparent in specimens treated with caustic potash.

Length of body—about 1.5 mm.

Host—*Arundinaria niitakayamensis*, attacking the lower side of the leaf.

Distribution.—Formosa: Tattaka (altitude about 7330 feet).

Many apterous females were collected by the author on May 18, 1924.

Oregma montana van der Goot ?

Contrib. Fauna Indes. Neerland., 1, 3, p. 205 (1917).

Host.—*Bambusa stenostachya*, *Bambusa pachinensis*, *Arundinaria sp.*, attacking the lower surface of the leaf.

Distribution.—Formosa: Heito, Sakuraonsen near Musha; Java.

Hitherto unrecorded from Formosa.

The wingless viviparous females densely grouping on the host were found in abundance on November 29, 1923, at Heito. A few winged and wingless forms were observed on the same host at Heito on February 17, 1924. Numerous apterous forms were observed at Sakuraonsen near Musha in Taichu-prefecture on May 15, 1924.

These specimens agree exactly with the original description in many characters, but differ from it as follows:

(1) Body a little smaller. (2) Apterous form never yellowish. (3) Apterous form provided with 0-4 very small wax-pores on the dorsum of the head. (4) Apterous form provided with more wax-pores on the dorsum of the thorax. (5) Nymphs never yellowish.

An *Oregma* previously recorded by the author as *montana* v. d. Goot (Aphididae of Formosa, part 2, p. 52) is not true *montana* v. d. Goot, but is *pseudomontana* Takah.

Ceratoglyphina bambusae v. d. Goot.

Contrib. Fauna Indes. Neerland. 1, 3, p. 237 (1916).

Wingless viviparous female

Almost exactly agrees with the original description, but is slightly smaller. Antennae 4-jointed, but in some individuals 5-jointed. Thoracic and basal 8 abdominal segments each with from 3 to 5 circular wax-pores arranged in a longitudinal row on the side. These pores not transparent in specimens treated with potash.

Winged viviparous female

Head, antennae and thorax black. Head broad, with a pair of short, sharply pointed horns which are very slightly shorter than the 2nd antennal joint, not curved, broadened toward the base and provided with a few short hairs. Eyes large, with small ocular tubercles. Antennae short, the 3rd joint provided with about 22-27 ring-like sensoria regularly distributed over the whole length; the 4th with 8 similar sensoria; the 5th with 6 or 7 similar ones; the relative length of joints about as follows: III-55, IV-19, V-20. Rostrum stout, not reaching the middle coxae. Mesothorax large, simple on the dorsum. Fore wings very slightly clouded along the veins: veins stout: the 1st and 2nd obliques united at their bases, stouter than the 3rd; the 3rd obsolete at the base, once branched; stigmatic vein moderately curved; hind wings with 2 divergent obliques: hooklets 3. Abdomen without wax-pores. Spiracles slightly protuberant. Cornicles almost as in the apterous form. Cauda very short, broadly rounded, not constricted, furnished with many long stiff hairs. Anal plate broad, not bilobed, with many similar hairs. Hind tarsi almost as long as the 5th antennal joint.

Body—about 2.0 mm. Fore wing—about 2.5 mm.

Antenna—about 0.7 mm.

Host.—*Bambusa sp.*, attacking the lower side of the leaf.

Distribution.—Formosa: Taihoku. Java.

Hitherto unrecorded from Formosa.

Many apterous and some winged viviparous females densely grouping on the basal portions of the leaves were collected by the author on May 23, 1925, at Taihoku.

In the nymphs of the winged form, pro-and metathoraci and abdominal segments are provided with wax-pores on the side. The outlines of these pores are indistinct.

Cerataphis bambusifoliae n. sp.

(Pl. III, B, figs. 9-10).

Wingless viviparous female

Black, with white wax on the whole margin of the body. Body about 1.4 times as long as wide, with a few very small hairs on the dorsum of the abdomen. Wax-pores very elongate, arranged in a single row on the whole margin of the body, about 270-280 in number. Head on the ventral surface between the antennae with 3 pairs of short bristles each arising from a minute tubercle, of these tubercles the hind pair the largest and the middle the smallest. Horns rather small, moderately expanded towards the base, with the tip rounded, almost united on the basal half, almost as long as the 4th antennal joint. Eyes small, composed of 3 facets. Antennae short, rather slender, 5-jointed, with a few bristles; the 3rd joint almost as long as the basal 2 joints taken together, without sensoria: the 4th somewhat narrowed towards the base, the sensorium very small; the relative length of joints about as follows: III-20, IV-13, V-28. Rostrum very stout, nearly reaching the middle coxae. Abdomen provided with a few bristles around the cornicle and some moderately long bristles on the hind portion of the venstral surface. Cornicles small, represented almost by pores. Cauda much wider than long, constricted at the base, almost as wide as the lobe of the anal plate, much larger than the cornicle, with some very long bristles, of which one pair is much longer and stouter. Anal plate bilobed, with some very long bristles. Legs short, with some rather long bristles; tibiae stouter than the antenna, hind tibiae almost as long as the antenna; hind tarsi slightly shorter than the 5th antennal joint.

Length of body—about 1.9 mm.

Host.—*Bambusa sp.*, attacking the leaf and stem.

Distribution.—Formosa; Hori in Taichu-prefecture.

Many wingless viviparous females were collected by the author on May 23, 1924.

Of the wax-pores on the margin of the body, those on the middle portion of the body are more elongate. This species may be easily distinguished from other species of *Cerataphis*, *C. lataneae Boisd.*, *C. freycinetiae* v. d. Goot and *C. formosanus* Takah., by the 5-jointed antennae.

Aleurodaphis mikaniae n. sp.

Wingless viviparous female

Differs from *A. blumeae* v. d. Goot in the following characters:

(1) Rostrum shorter, usually reaching the middle coxae.

(2) Antennae longer, 5-jointed, the relative length of joints about as follows: III-40, IV-20, V-33. In *A. blumeae* they are 4 or 5-jointed, with the 3rd joint shorter.

(3) Wax-pores on the margin of the body more in number (about 180 in all). In *A. blumeae* they are about 120 in number.

Length of body—about 1.6 mm. Antenna—about 0.5 mm.

Host.—*Mikania scandens*, attaking the stalk.

Distribution.—Sakuraonsen in Taichu-prefecture.

Numerous apterous females quite densely grouping were observed in abundance on May 15, 1924. This species is reddish brown in colour.

Astegopteryx cuspidatae Essig et Kuw.

Nipponaphis cuspidatae, Essig and Kuwana, Proc. Calif. Acad. Sc., 4th series, VIII, p. 111 (1918); Takahashi, Bull. Brooklyn Ent. Soc., XV, No. 4, p. 116 (1920).

Astegopteryx cuspidatae, Takahashi, Aphididae of Formosa, 2, p. 149 (1923).

Host.—*Quercus stenophylloides*.

Distribution.—Formosa: Sakuragamine (altitude about 8000 feet) in Taichu-prefecture; Japan.

Hitherto unrecorded from Formosa.

Many apterous females cemented to the branches were collected by the author on May 20, 1924.

Astegopteryx sp.

Wingless viviparous female

Black; eyes, antennae, legs, cauda, anal plate and bristles black, with white wax on the whole margin of the body. Body flattened, very hard, provided with about 25 long, very stout bristles. Head very wide on the front.

Eyes situated on the margin of the head, protuberant, composed of 3 facets. Antennae very short, shorter than the bristle on the body, 3-jointed. Rostrum reaching the middle coxae. Legs very short. Genital plate rather large, provided with about 15 long stout bristles arranged in a row on the posterior margin, these bristles much shorter than those on the body. Cauda constricted at the base, furnished with some long bristles. Anal plate bilobed, with some similar bristles. In specimens treated with caustic potash, numerous small wax-pores ? visible which are not transparent, rather irregular in shape and scattered over the dorsum.

Length of body—about 1.4 mm.

Host.—*Quercus glauca*, attacking the branch.

Distribution.—Formosa: Baikei near Musha in Taichu-prefecture; Shirin.

Hitherto unrecorded from Formosa.

Many apterous forms firmly cemented to the host were collected by the author on May 21, 1924. They were covered with tents by ants. This species closely resembles *Astegopteryx hongkongensis* v. d. Goot and *A. arboris* v. d. Goot. No winged forms have ever been collected.

Formosaphis n. g.

(Winged form) Body provided with a few bristles which are not capitate, without dorsal tubercles. Head divided, without wax-plates. Frontal tubercles absent. Eyes with small ocular tubercles. Antennae short, stout, 5-jointed, almost without hairs, a very large sensory area which is reticulated present on each of the 3rd, 4th and 5th joints, spur of the last joint very small. Fore wings with the 3rd oblique simple, stigma not elongate; hind wings with 2 obliques. Abdomen with wax-plates. Cornicles absent. Cauda not distinct. Anal plate rounded. Tarsi normal.

(Wingless form) Head small. Eyes of 3 facets. Antennae 4 or 5-jointed, without secondary sensoria; primary sensoria circular, small. The 7th abdominal segment with a small blunt tubercle on the side. Other characters almost as in the winged form.

Type—*Formosaphis micheliae* n. sp.

This genus is peculiar in the nature of the antennal sensoria of the winged form, and will fall in Melaphidini.

Formosaphis micheliae n. sp.

(Pl. IV, B, figs. 1-4)

Winged viviparous female

Yellow. Head, eyes, antennae and thorax black. Wings somewhat dusky; stigma and veins blackish. Body oblong. Head divided, provided with some very short hairs, without wax-plates. Eyes large, not distinctly protruding, with the ocular tubercles very small. Frontal tubercles absent. Antennae short, stout, 5-jointed, without hairs; the 3rd joint almost as long as the basal 2 joints taken together; a very large sensory area which is reticulated present on each of the 3rd, 4th and 5th joints; the relative length of joints about as follows: III-35, IV-40, V-45. Rostrum almost reaching the hind coxae. Fore wings with the 3rd oblique not branched, the 1st and 2nd obliques almost united at their bases, stigma not elongate; hind wings with 2 obliques which are united at their bases. Abdomen furnished with some wax-plates, from each of which a rather long bristle arises. Cornicles absent. Cauda not distinct, Anal plate large, rounded, with some rather long bristles. Legs moderately long; femora almost as stout as or more so than the antenna; tibiae slender, with many moderately long setae, furnished with a few short spine-like setae at the apex; tarsi not imbricated; hind tarsi slightly shorter than the 3rd antennal joint.

Length of body—about 2.5 mm. Antenna—about 0.75 mm.

Metanotum with a pair of small subcircular wax-plates ?.

Full-grown nymph of winged viviparous female

Body furnished with a few rather long bristles on the dorsum. Eyes of numerous facets, not protuberant, with small ocular tubercles. Antennae large, very stout, 5-jointed, without hairs; the 4th joint with a very small circular sensorium; the 5th with a somewhat larger oval sensorium; the relative length of joints as follows: III-25, IV-31, V-41. Rostrum reaching the hind coxae. Abdomen with a wax-plate on the side of each of the 3rd and 7th segments, 4 wax-plates arranged in a transverse row on the dorsum of each of the 4th, 5th and 6th segments; these wax-plates rather large, subcircular or oval, and a rather long bristle arises from each; the 7th segment with a small blunt tubercle on the side. Cornicles absent.

Length of body—about 2.0 mm.

Wingless viviparous female

Brownish yellow, somewhat with cottony secretions. Head dusky on the dorsum. Antennae, anal plate and legs dusky. Body oval, soft, with a few rather long bristles on the dorsum. Head small, not divided, with about 3 pairs of small circular wax-secreting arears? on the dorsum. Eyes composed of 3 facets. Frontal tubercles absent. Antennae very short, 4 or 5-jointed, furnished with a few short hairs; the last 2 joints each with a very small circular sensorium; the relative length of joints about as follows: I-10, II-12, III-8, IV-14, V-25. Rostrum large, reaching the middle coxae or a little beyond the hind coxae. Abdomen furnished with a wax-plate on the side of each of the 3rd and 7th segments, 4 wax-plates arranged in a transverse row on the dorsum of each of the 4th, 5th and 6th segments; these wax-plates rather large, subcircular and a rather long bristle arises from each; the 7th with a small blunt tubercle on the side. Cornicles absent. Cauda not distinct. Anal plate large, rounded, with many long bristles. Legs short; tibiae with a few short hairs, on the apex provided with a few short spine-like setae; front tibiae almost as stout as the antenna; hind tibiae somewhat longer than the antenna; hind tarsi a little longer than the 3rd antennal joint.

Length of body—about 2.0 mm.

Host.—*Michelia longifolia*, attacking the stem and branch.

Distribution.—Formosa: Taihoku.

Numerous apterous females the antennae of which were 4-jointed were observed on July 25, 1924. Numerous winged forms and their nymphs, as well as a few apterous forms with 5-jointed antennae, were observed on November 20, 1924.

Hitherto unrecorded from Formosa.

Tetraneura? sp.

(Pl. IV, B, figs. 6-9)

Wingless viviparous female

Almost yellowish brown, with brownish dusky legs (colour notes from specimens preserved in alcohol). Body stout, furnished with a few small, circular or oval wax-plates, covered with moderately long bristles which are finer than those on the antenna. Head small. Eyes composed of 3 facets. Antennae much more slender than the tibia, almost as long as the hind tibia and tarsus (not including the claw) taken together, 6-jointed, covered with numerous bristles which are almost as long as those on the body and shorter than the last joint: the 5th joint with a very small circular sensorium at the apex, which is surrounded by a row of short setae; the 6th very short, conical, with a similar sensorium, furnished with a few longer bristles; the relative length of joints about as follows: I-16, II-20, III-17, IV-15, V-46, VI-11. Rostrum very stout, reaching the hind coxae. Cornicles very small, situated on small, somewhat elevated cones. Abdomen furnished with some extremely long stout bristles on the terminal portion. Cauda very small, with a few (4 ?) rather long bristles. Anal plate bilobed. Legs rather large, very stout, covered with many hairs which are almost similar to those on the body; femora stouter than, but almost as long as, the tibia; tarsi stout, somewhat tapering, one-jointed, not imbricated, with a few longer bristles, almost as long as the 4th antennal joint.

Length of body—about 3.2 mm. Antenna—about 0.77 mm.

Host.—A plant of the Gramineae, attacking the root.

Distribution.—Formosa: Toseikaku, Taichu-prefecture.

Some apterous forms were collected on December 25, 1924.

The 5th antennal joint is sometimes provided with a small circular sensorium not surrounded by setae near the base.

Field observations on some Aphididae in Formosa (supplement)

Macrosiphum gobonis Mats.

Cirsium kawakamii: many viviparous females were observed on this plant on May 19, 1924, at Tattaka, Taichu-prefecture.

Macrosiphum pisi Kalt.

Myrica rubra: some apterous viviparous females collected on this plant on May 17, 1924, at Tattaka seem to belong to this species.

Macrosiphum granarium Kirby.

Setaria glauca: some apterous and winged viviparous females were observed on October 26, 1923, near Taihoku.

Macrosiphum citricola v. d. Goot.

Thea japonica: a few apterous forms on April 29, 1923, at Taihoku.

Macrosiphum sanborni Gillette.

The viviparous females were found in abundance on the host on October 1, 1923, at Taihoku. *M. nishigaharae* Essig et Kuw. is a synonym of this species.

Myzus persicae Sulz.

Ipomaea batatas: abundant on December 23, 1923, near Taihoku.

Nerium odorum: a few apterous viviparous females in April, 1923, at Taihoku.

Polygonum multiflorum: a few apterous viviparous females on April 24, 1923, at Taihoku.

Antirrhinum majus: a few apterous viviparous females in January, 1924, at Taihoku.

Zelkowa formosana: a few apterous viviparous females on May 15, 1924, at Baikei, Taichu-perfecture.

Sesamum indicum: some apterous forms on June 15, 1924, at Taihoku.

Phorodon humuli Schrank.

Numerous apterous viviparous females were observed on *Humulus japonicus* on January 14, 1925, at Taihoku.

Trichosiphonaphis polygoniformosanus Takah.

Numerous brownish yellow apterous forms were observed on *Polygonum perfoliatum* on August 16, 1923, at Taihoku.

Rhopalosiphum avenae Fab.

Oryza sativa: some viviparous females were observed on this plant in a glass house on April 24, 1923, at Taihoku.

Rhopalosiphum nymphaeae L.

Prunus communis: abundant on February 25, 1923, at Taihoku.

Salvinia natans: a few nymphs on October 14, 1923, near Taihoku.

Aphis tavaresi Del Guercio.

Citrus sp.: winged and wingless viviparous females were abundantly observed on October 15, 1923, at Sozan near Taihoku; numerous winged ones were collected in March, 1924, at Heito.

Hyalopterus pruni Fab.

Prunus communis: abundant on May 14, 1924, at Shushu, Taichu-prefecture.

Greenidea taiwana Takah.

Meliosma rigida: apterous forms were abundant in June, 1924, at Shinten, near Taihoku.

Eutrichosiphum minutum Takah.

A few apterous forms were collected on *Trachelospermum jasminoides* on October 6, 1924, near Taihoku.

Eutrichosiphum lithocarpi Maki.

Castanopsis subacuminata: many viviparous females, both winged and wingless, were observed on November 25, 1923, at Botan and Kusukusu, Koshun.

Oregma lanigera Zehnt.

Many apterous and winged viviparous females were found on a *Miscanthus* on October 21, 1923, at Taihoku.

Cerataphis lataniae Boisd.

Numerous apterous and a few winged forms were observed on *Areca catechu* on September 5, 1924, at Taihoku.

Some apterous females and two nymphs of the winged form were collected on *Pothos seemanni* (Aroideae) at Urai on July 6, 1925.

Food plant catalogue of the Formosan Aphididae

(Supplement—2)

Antirrhinum majus L. (Scrophularineae)
  Myzus persicae Sulz.

Arctium lappa L. (Compositae)
  Macrosiphum sp.

Areca catechu L. (Palmae)
  Cerataphis lataniae Boisd.

Arundinaria niitakayamensis Hay. (Gramineae)
  Oregma tattakana Takah.

Arundinaria sp.
  Oregma montana v. d. Goot ?

Astilbe longicarpa Hay. (Saxifrageae)
  Myzus montanus Takah.

Bambusa pachinensis Hay. (Gramineae)
  Oregma montana v. d. Goot ?

Bambusa stenostachya Hack.
  Oregma montana v. d. Goot ?

Bambusa sp.
  Cerataphis bambusifoliae Takah.
  Ceratoglyphina bambusae v. d. Goot.
  Myzocallis sasae Mats ?

Brassica oleracea Lour. (Cruciferae)
  Brevicoryne brassicae L.

Castanea formosana Hay. (Cupuliferae)
  Greenidea tattakana Takah.

Casuarina equisetifolia L. (Casuarineae)
Aphis gossypii Glov.

Cirsium kawakamii Hay. (Compositae)
Macrosiphum gobonis Mats.

Desmodium triquestrum DC. (Leguminosae)
Aphis sp.

Evodia roxburghiana Benth. (Rutaceae)
Macrosiphum sp.

Ficus aukeotsang Mak. (Urticaceae)
Toxoptera aurantii Boyer.

Ficus elastica Roxb.
Astegopteryx fici Takah.

Lactuca oldhami (Compositae)
Macrosiphum sp.

Lespedeza sp. (Leguminosae)
Aphis sp.
Macrosiphum sp.

Liquidambar formosana Hay. (Hammamelideae)
Dilachnus liquidambarus Takah.
Stomaphis liquidambarus Takah.

Lobelia pyramidalis Wall. (Campanulaceae)
Anuraphis helichrysi Kalt.

Mahonia morrisonensis Takeda. (Berberideae)
Amphorophora viburni Takah.

Malus formosana Kaw. et Koid. (Rosaceae)
Myzus sp.

Mangifera indica L. (Anacardiaceae)
Greenidea mangiferae Takah.

Melastoma candidum Don. (Melastomaceae
Aphis gossypii Glov.

Meliosma rigida S. et Z.
Greenidea taiwana Takah.

Michelia longifolia Blum. (Magnoliaceae)
Formosaphis micheliae Takah.

Mikania scandens Willd. (Compositae)
Aleurodaphis mikaniae Takah.

Myrica rubra S. et Z. (Myricaceae)
Aphis sp.
Greenidea myricae Takah.
Macrosiphum pisi Kalt.

Nerium odorum Saland. (Apocynaceae)
Aphis nerii Boyer.
Aphis sp.

Petasites tricholobus Franch. (Compositae)
Capitophorus sp.
Macrosiphum sp.

Phragmites karka Trin. (Gramineae)
Aphis bambusae Full ?

Pinus sp. (Coniferae)
Dilachnus orientalis Takah.

Polypodium ellipticum Thunb. (Polypodiaceae)
Amphorophora katoi Takah.

Prunus communis Huds. (Rosaceae)
Hyalopterus pruni Fab.

Prunus taiwaniana Hay.
Myzus sakurae Mats ?

Quercus glauca Thunb. (Cupuliferae)
Astegopteryx sp.
Greenidea nigrofasciata Maki.

Quercus serrata Thunb.
Greenidea tattakana Takah.

Quercus stenophylloides Hay.
Astegopteryx cuspidatae Essig et Kuw.
Greenidea kuwanai Perg.
Greenidea tattakana Takah.

Quercus sp.
Astegopteryx sp.
Greenidea mushana Takah.
Greenidea sp.
Myzocallis sp.

Rhododendron lasiostylum Hay. (Ericaceae)
Macrosiphum itoe Takah.

Rosa sp. (Rosaceae)
Macrosiphum rosaefolium Theob.

Rubus sp. (Rosaceae)
Matsumuraja formosana Takah.

Saccharum officinarum L. (Gramineae)
Aphis sacchari Zehnt.

Salix sp.
Cavariella japonica Essig et Kuw.

Scirpus lacustris L. (Cyperaceae)
Toxoptera scirpi Pass.

Sesamum indicum L. (Pedalineae)
Myzus persicae Sulz.

Setaria italica Kunth. (Gramineae)
Aphis maidis Fitch.

Siegesbeckia orientalis L. (Compositae)
Myzus sp.

Solidago virga-aurea L. (Compositae)
Macrosiphum sp.

Stellaria aquatica Scop. (Caryohylleae)
Amphorophora sp.

Tsuga formosana Hay. (Coniferae)
Dilachnus taiwanus Takah.

Wendlandia paniculata DC. (Rubiaceae)
Aphis odinae v. d. Goot.

Viburnum arboricolum Hay. (Caprifoliaceae)
Amphorophora viburni Takah.

Zelkova formosana Hay. (Urticaceae)
Myzocallis mushensis Takah.
Myzus persicae Sulz.

(Hosts unknown)
Anoecia sp.
Lachnus niitakayamensis Takah.

General consideration

(1) At present 181 species of the subfamily Aphidinae are known to occur in Formosa. Of these species, 103 belong to the tribe Aphidina, 16 to the tribe Greenideina, 12 to the tribe Callipterina, 15 to the tribe Lachnina, 26 to the tribe Hormaphidina and 9 to the tribe Pemphigina. The subfamily Chermesinae is very scarce in species, containing only one unidentified species attacking *Pinus sp.* It is very remarkable that the Greenideina and Hormaphidina have many species, while the Callipterina and Pemphigina, as well as Chermesinae, are relatively fewer in species. A similar fact is also seen in the aphid fauna of Java. In Japan proper, however, the Greenideina and Hormaphidina are very few in species, though the Pemphigina, Callipterina and Chermesinae have many species. This indicates that the aphid fauna of Formosa is to be regarded as Oriental rather than Palaearctic.

(2) The following cosmopolitan species have been found in Formosa: *Macrosiphum rosae* L., *M. pisi* Kalt., *M. granarium* Kirby., *M. sanborni* Gillette, *Myzus persicae* Sulz., *Phorodon humuli* L., *Rhopalosiphum avenae* Fab., *R. nymphaeae* L., *R. pseudobrassicae* Davis, *Aphis gossypii* Glov., *A. medicaginis* Koch, *A. rumicis* L., *A. pomi* De Geer, *A. maidis* Fitch, *Toxoptera aurantii* Boyer, *Brevicoryne brassicae* L., *Anuraphis helichrysi* Kalt., *Hyalopterus pruni* Fab., *Lachnus viminalis* Boyer, etc.

(3) Of the 162 Formosan aphids, excluding the above named cosmopolites, about 45 species have also been found in Japan proper. *Cavariella japonica* Essig et Kuw., *Greenidea kuwanai* Perg. and *Astegopteryx cuspidatae* Essig et Kuw., in Formosa, are found only on high mountains (altitude more than 7000 feet), though they occur in low localities in Japan.

According to P. van der Goot, about 80 species of the family are known in Java, of these 31, including about 14 cosmopolites, have been collected in Formosa. From India, about 60 species have been recorded, of which 27, including about 17 cosmopolitan species, have been discovered in our island. The species hitherto recorded from China and the Philippines are not sufficiently numerous to be considered here.

From our present knowledge, the aphid fauna of Formosa appears to be very closely related to that of Japan proper. However, as further thorough researches are made on these insects in China, the Philippines, India, the Malay

Peninsula and other adjacent regions, it will probably be proven that the aphid fauna of Formosa is more closely related to that of Southern Asia than to that of Japan. It is very interesting that *Pterochlorus tropicalis* v. d. Goot found in India, China and Japan is not seen in Formosa.

(4) Up to the present time about 3740 species of plants arranged in about 1200 genera have been recorded from Formosa. Of these plants about 260 species in 179 genera are now known to be fed upon by aphids in Formosa.

(5) Near Taihoku almost all aphids are viviparous throughout the year, without producing sexual forms; and *Callipterus kahawaluokalani* Kirk. is the only species in Formosa, which is, at present, known to produce the males and oviparous females in the fall and to pass the winter only in the egg stage.

Shivaphis celti Das on old *Celtis* sometimes produces males, as well as oviparous females, in the fall, though the same species on younger host-trees is continuously viviparous, without producing the true sexes, even in the winter (see "Aphididae of Formosa," part 2, p. 132 and part 3, p. 66). An oviparous female has been discovered in *Neophyllaphis podocarpi* Takah., although the males have never been collected (see "Aphididae of Formosa", part 2, p. 129). A few males of *Myzus persicae* Sulz. ("Aphididae of Formosa", part 2, p. 21), *Hyalopterus chenopodii* Schrank and *Brachycolus heraclei* Takah. (see "Aphididae of Formosa", part 3, pp. 48 and 50) have been found near Taihoku, their oviparous females, however, having never been discovered in Formosa.

(6) There are numerous natural enemies of these insects in Formosa, but it is a very interesting fact that no Hymenoptera parasitic upon *Oregma* have ever been collected there.

Explanation of plates

Plate I.

A

Macrosiphum itoe n. sp.
(Wingless viviparous ♀)
Fig. 1........................Head.
Fig. 2........................Cornicle.
Figs. 3-4......................Cauda, hairs being removed.
(Winged viviparous ♀)
Fig. 5......................Cornicle.

Myzus montanus n. sp.
Fig. 6......................Cornicle of young nymph.

Myzus species on *Malus formosanus.*
(Wingless viviparous ♀)
Figs. 7-8..................Cornicle.
Fig. 9......................Inner side of frontal tubercle.

Myzus sakurae Mats. ?
(Wingless viviparous ♀)
Figs. 10-11...............Cornicle.

B

Macrosiphum rosaefolium Theob.
(Wingless viviparous ♀)
Fig. 1......................Frontal tubercles.
Fig. 2......................Cornicle.

Myzus sakurae Mats. ?
(Wingless viviparous ♀)
Fig. 3......................Head.
(Winged viviparous ♀)
Fig. 4......................Head.
Fig. 5......................Cornicle.

Myzus montanus n. sp.

(Wingless viviparous ♀)

Fig. 6.....................Head.
Fig. 7.....................Cornicle.

(Winged viviparous ♀)

Fig. 8.....................Cornicle.
Fig. 9.....................Cauda, hairs being removed.
Fig. 10.....................Frontal tubercle and 1st antennal joint.

Plate II.

A

Capitophorus sp. on *Petasites tricholobus.*

Fig. 1.....................Cornicle of wingless viviparous ♀

Matsumuraja formosana n. sp.

(Wingless viviparous ♀)

Fig. 2.....................Head.
Fig. 3.....................Cauda.
Fig. 4.....................Cornicle.

Amphorophora viburni n. sp.

(on *Mahonia morrisonensis*)

Fig. 5.....................Cornicle of winged viviparous ♀

(Wingless viviparous ♀)

Fig. 6.....................Head.
Fig. 7.....................Cornicle.
Fig. 8.....................Cauda.

B

Amphorophora viburni n. sp.

Fig. 1.....................Cauda of winged viviparous ♀

Amphorophora sp. on *Stellaria.*

Fig. 2.....................Cornicle of wingless viviparous ♀

Toxoptera scirpi Pass.

(Wingless viviparous ♀)

Fig. 3……………………Head.
Fig. 4……………………Cornicle.
Fig. 5……………………Cauda,

(Winged viviparous ♀)

Fig. 6……………………3rd and 4th antennal joints.
Fig. 7……………………Cornicle.
Fig. 8……………………Cauda.

Myzocallis mushensis n. sp.

(Winged viviparous ♀)

Fig. 9……………………Sensoria on 3rd antennal joint.
Fig. 10……………………Cornicle.

Greenidea mushana n. sp.

Fig. 11……………………Cornicle of winged viviparous ♀.

Plate III.

A

Greenidea mushana n. sp.

Fig. 1……………………Sensoria on 3rd antennal joint of winged viviparous ♀.

Greenidea taiwana Takah.

Fig. 2……………………3rd antennal joint of winged viviparous ♀.

Greenidea myricae n. sp.

Fig. 3……………………Cornicle, hairs being removed, of winged viviparous ♀.
Fig. 4……………………Cornicle of wingless viviparous ♀.

Dilachnus taiwanus n. sp.

Fig. 5……………………Cornicle, hairs being removed, of wingless viviparous ♀.

Dilachnus orientalis n. sp.

(Wingless viviparous ♀)

Fig. 6……………………Cornicle, hairs being removed.

(Winged viviparous ♀)
Fig. 7......................Part of 3rd antennal joint.

B

Greenidea tattakana n. sp.
(Winged viviparous ♀)
Fig. 1......................3rd antennal joint.
Fig. 2......................Cornicle.
(Wingless viviparous ♀)
Fig. 3......................Cornicle.

Eutrichosiphum minutum Takah.
(Winged viviparous ♀)
Fig. 4......................Cornicle, hairs being removed.
Fig. 5......................3rd antennal joint.
(Wingless viviparous ♀)
Fig. 6......................Cornicle.

Oregma tattakana n. sp.
(Wingless viviparous ♀)
Fig. 7......................Horns on head.
Fig. 8......................Cornicle.

Cerataphis bambusifoliae n. sp.
(Wingless viviparous ♀)
Fig. 9......................Horns on head.
Fig. 10....................Antenna.

Plate IV.

A

Amphorophora katoi n. sp.
(Wingless viviparous female)
Figs. 1-2....................Cornicle.
Fig. 3......................Cauda.
Fig. 4......................Frontal tubercles.

(Winged viviparous female)

Fig. 5......................Cauda.
Fig. 6......................Cornicle.

Myzus polypodicola Takah.

Collected in Sumatra.

(Wingless viviparous female)

Fig. 7 ....Cauda
Fig. 8......................Cornicle.

B

Formosaphis micheliae n. g. et n. sp.

(Winged viviparous female)

Fig. 1......................Antenna.
Fig. 2......................Part of sensory area of antenna.
Fig. 3......................Wax-plate on the dorsum of the full-grown nymph.
Fig. 4......................Antenna of the same.

Myzus polypodicola Takah.

(Wingless viviparous female)

Fig. 5......................Head.

Tetraneura? *sp.*

(Wingless viviparous female)

Fig. 6......................Antenna.
Fig. 7......................Hind leg (hairs removed from the tibia).
Fig. 8......................Cornicle.
Fig. 9......................Abdominal apex.

PLATE I

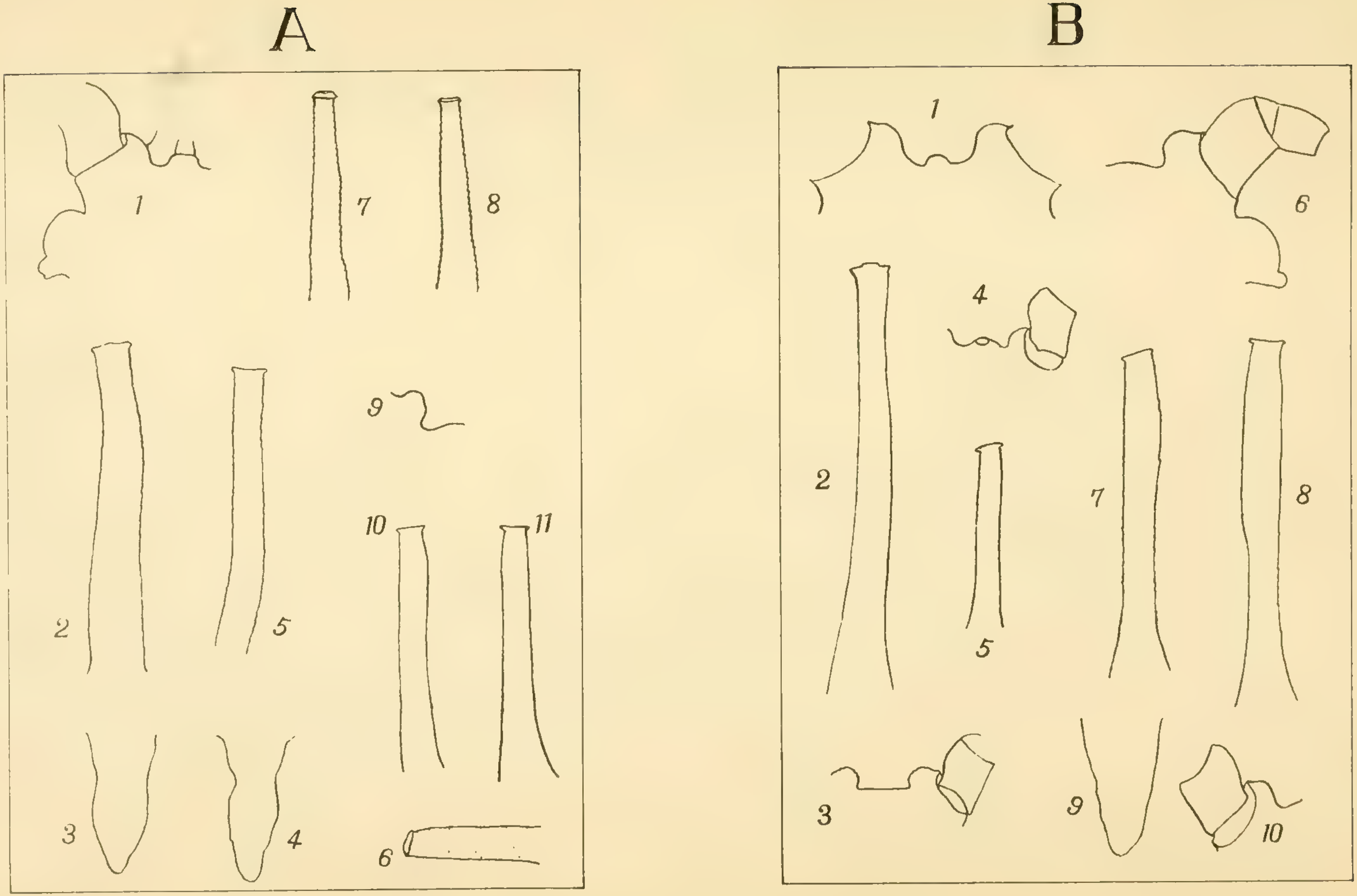
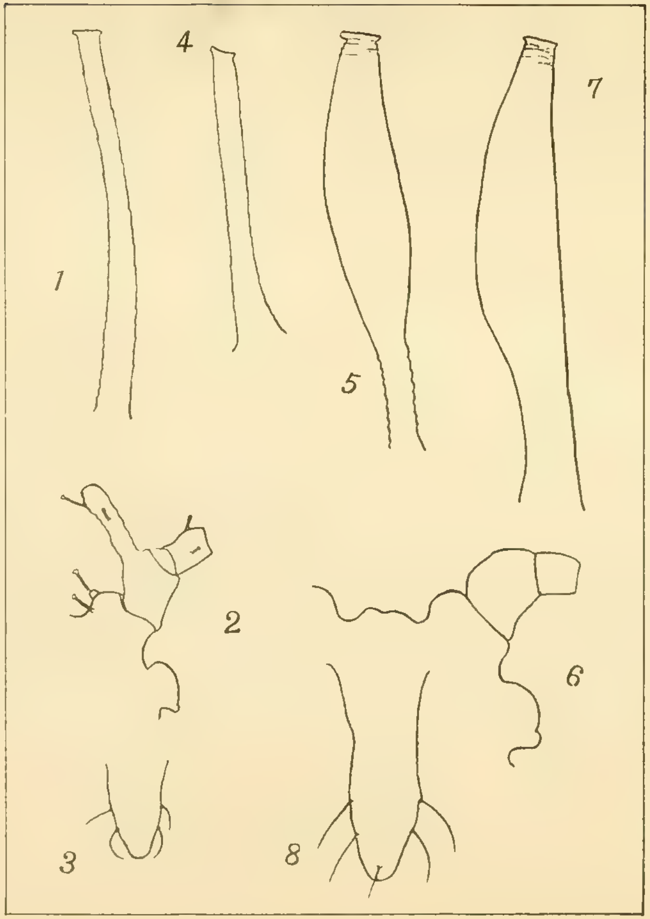


PLATE II

A



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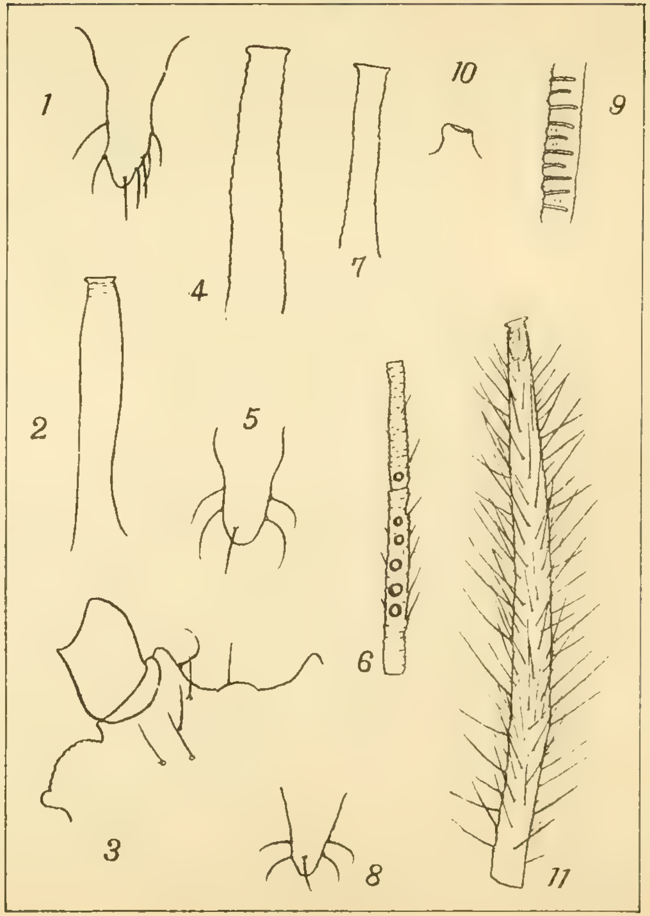

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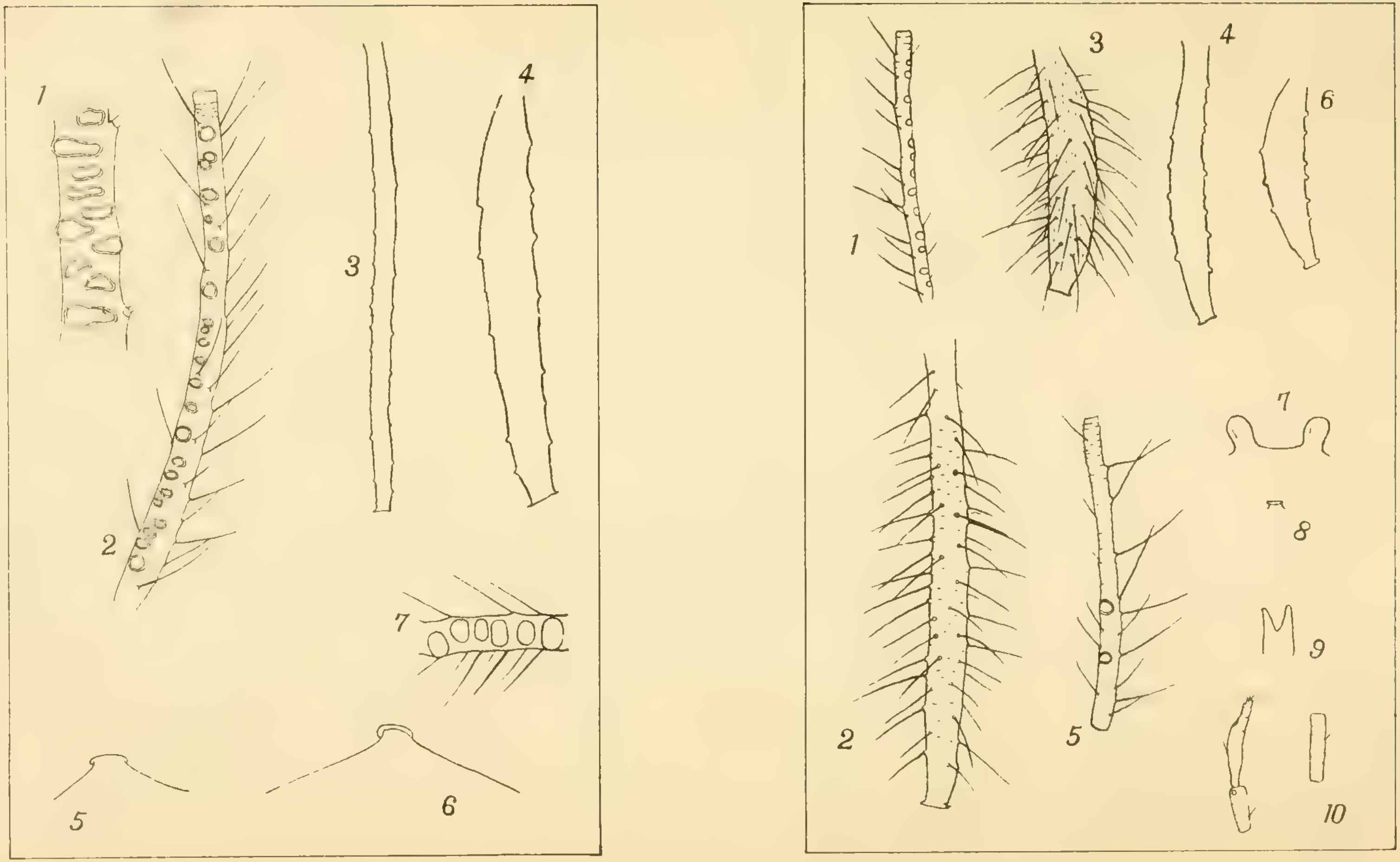
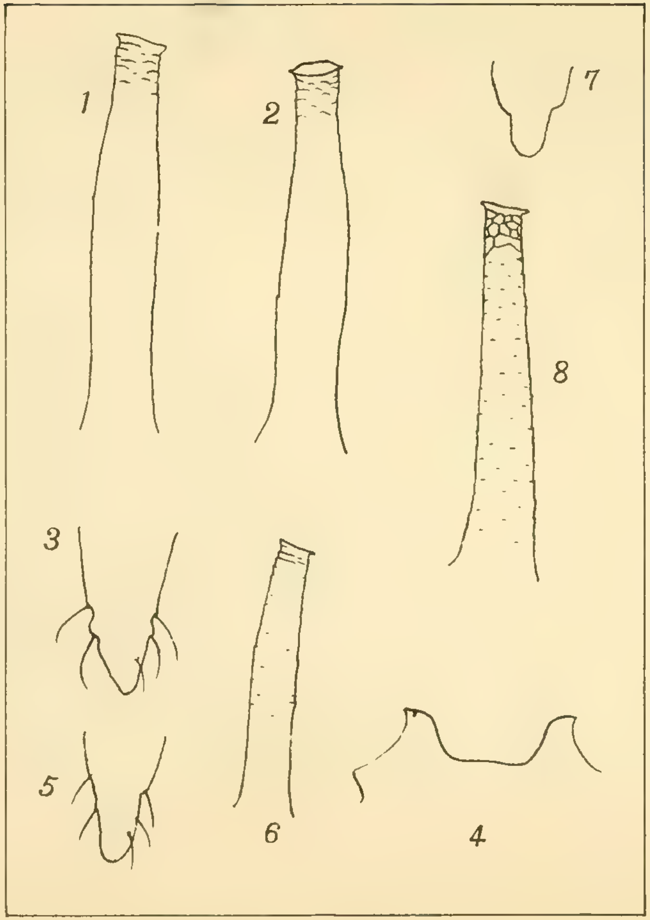

A

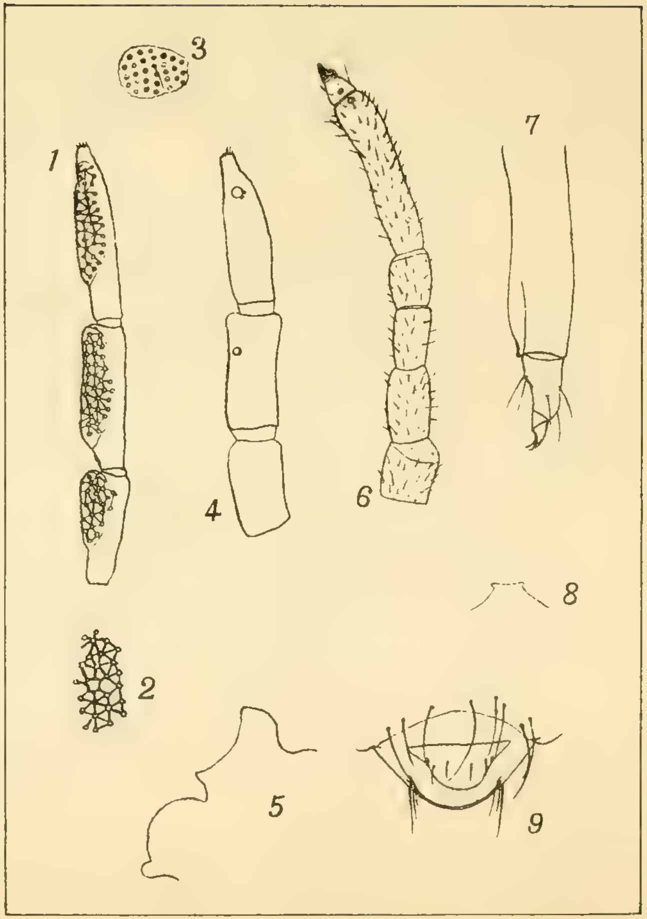
B

PLATE IV

A



B



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